

# **OCCUPATIONS AND CAREERS**



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# OCCUPATIONS

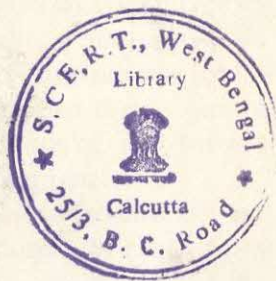


ST. LOUIS   NEW YORK   SAN FRANCISCO  
DALLAS   TORONTO   LONDON

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*c*  
**AND CAREERS**



**WEBSTER DIVISION,  
MCGRAW-HILL BOOK COMPANY**



# OCCUPATIONS AND CAREERS

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Library of Congress Catalog Card Number: 54-6216

24356

7 8 9 10 11 12 13 14 - MP - 1 0 9 8 7

S.C.E.R.T., West Bengal

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## PREFACE

OCCUPATIONS AND CAREERS, designed for an occupations course, covers typical occupations and industries, and is organized in three parts. Part I concerns the individual—his interests, hobbies, knowledge of local opportunities, how to study occupations, and how to get a job. Part II concerns individual occupations grouped according to the standard classification of the *Dictionary of Occupational Titles*. The groups cover many broad fields of work, and occupations within each of the groups are in some way related as to preparation, duties, and other factors. For example, professional occupations most often require a college education. Clerical and sales jobs require no more training than is offered in public schools. Agricultural jobs presuppose some experience in living on a farm. Service jobs are often learned in vocational schools. Skilled trades are learned through apprenticeship. Unskilled work requires no preparation or experience. Anyone who enters the labor market will work in one of these areas. Part III discusses typical industries that employ workers in all occupational classifications. Thus oc-

cupations are not only described separately as to requirements and work involved but also discussed as a part of the work process in various large industries.

At the end of each chapter three kinds of supplementary material are presented: (1) "For Discussion" includes topics discussed in the text and in effect constitutes a review of the chapter; (2) "How to Relate School Subjects to Occupations" includes suggestions that subject-matter teachers may wish to use to motivate students who see too few relationships between school courses and jobs in the community; (3) "What to Read" includes a list of books, appropriate to the subject of the chapter, for use of, and further reading by, the student.

The Seventeenth Decennial Census of Occupations was taken as of April 1, 1950, by the Bureau of the Census, and 1950 figures from the Census are provided throughout this book. The analytical tables, also based on the 1950 Census, in the Appendix provide comprehensive data for job planning. Salary data, where included, are taken from other sources, and it must be recognized



that salaries are not static but fluctuate with business conditions, geographical location, and many other factors. At best, salaries are only relative.

A comprehensive list of visual aids, listed by chapters, as well as by occupations, is available upon request to the publisher.

OCCUPATIONS AND CAREERS was written on the premise that every able boy must eventually earn a living for himself and his family and that every girl should prepare herself to earn a living as a matter of security, if not necessity. In time, every student in school or college must know enough about occupations to choose a career intelligently. Then comes the eternal question, "What shall I do?"

Choosing a career brings young people face to face with a bewildering array of more than 22,000 different occupations at which people earn a living. These same jobs are also known by more than 40,000 different job titles.

The teacher or counselor can give some clue to this maze of jobs, but his work in the field of guidance is not an exact science. It is rather a process of helping an individual to help himself. A good counselor does not tell a student what he is best fitted for, but he suggests a number of fields of work that might be attractive, helps the student decide upon a suitable occupation, and advises about training and training opportunities.

To supplement other evidence about a student, a teacher or counselor may wish to use some of the many standardized tests available for helping to determine achievement, intelligence, aptitudes, interests, trade knowledge, etc. Such tests are helpful in discovering interests and aptitudes for certain fields of work, but they are of little value in locating the *one* occupation that a person should enter. Most individuals might be equally successful in a number of different vocations. For that reason no counselor or guidance service is able to point out the one vocation that an individual is best fitted for. No counselor, during an interview, can inform each student about the variety of occupations that are described in this text. The student gains such information from a regular occupations course, where he studies and analyzes for himself many different occupations. With the help of a teacher or counselor, he soon learns to make plans for the future. With a plan, he not only selects courses of study with a purpose but also progresses toward some occupational goal.

If a community does not provide a counselor, then the teacher of an occupations course becomes increasingly important as a means of furnishing students with unbiased job information. Every student listens to advice offered by parents, relatives, and well-meaning friends who, with slight job knowledge, suggest this or that work as a promising career.

With every new invention someone suggests, "You should get in on the ground floor."

An occupations course gives a student the opportunity to appraise such advice by checking his own personal qualifications, investigating employment possibilities, and comparing the suggested work with other job opportunities. An occupations course is not a substitute for a trained counselor, but, like any scientific course, it is a systematic study of occupations aimed at understanding, classifying, and learning how to prepare for jobs in different fields of activity. It does not aim to have each student "choose his career" by the end of the course, but it does furnish students with a background of job knowledge for comparison and for choice of occupational opportunities.

The time approaches when a student has acquired enough knowledge about jobs to choose an occupation. Maturity and necessity, rather than age or grade in school, determine the time for vocational choice. Some students find an aim in life earlier than others, in spite of age levels. An interest in occupational choice may develop in the junior high school. It becomes more intense in the senior year of high school as graduation approaches and time for leaving school arrives. Those who plan to enter the professions must make their choices early in order to meet college entrance requirements. Others who enter liberal arts colleges may defer

occupational choice until the end of the sophomore year or even later. The earlier a student studies occupations, the better able he is to choose school subjects that will prepare him for useful work.

Choosing an occupation is not a simple process but a long-term undertaking that requires thoughtful study of one's own qualifications, interests, and abilities; investigations of typical occupational groups; and some acquaintance with the work that industry does. Making choices of any kind depends upon what one knows or finds out about the different possibilities. A well-informed person chooses for value; one not well informed chooses blindly without purpose. Too many young people choose occupations blindly because they do not know how to go about studying opportunities that they might like. Ask a high school or college girl what she intends to do when she leaves school and she will probably mention one of the following categories: (1) homemaking—marriage, (2) clerical and sales work—typing or selling, or (3) professional work—teaching or nursing. Yet women are located in hundreds of other interesting jobs.

In choosing an occupation, personal likes and dislikes play a part. No two persons considering the same job will find the same advantages or disadvantages. Fortunately, the reasons for liking or disliking an occupation are individual ones, not to be challenged by anyone else. For that



reason no mention is made in this text of the "advantages" and "disadvantages" so often mentioned by authors of occupational literature. Is light clean work with regular hours an advantage? Is hazardous work with personal risks and high pay a disadvantage? One person will say "Yes" and another "No" to each of these questions.

In choosing occupations, students seldom receive much job information from the regular teaching staff, even on the college level. The teachers have their hands so full teaching subject matter that they seldom go

afield to explain the occupational opportunities and implications of their own subject areas. Several activities, therefore, are suggested in this text to encourage classroom teachers to add occupational units to their subject areas.

Grateful acknowledgement is made to the many educators and counselors who have contributed ideas, and to the agencies, associations, and industries whose generous assistance in furnishing materials helped to make this book possible.

WALTER JAMES GREENLEAF

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\* *Dictionary of Occupational Titles*



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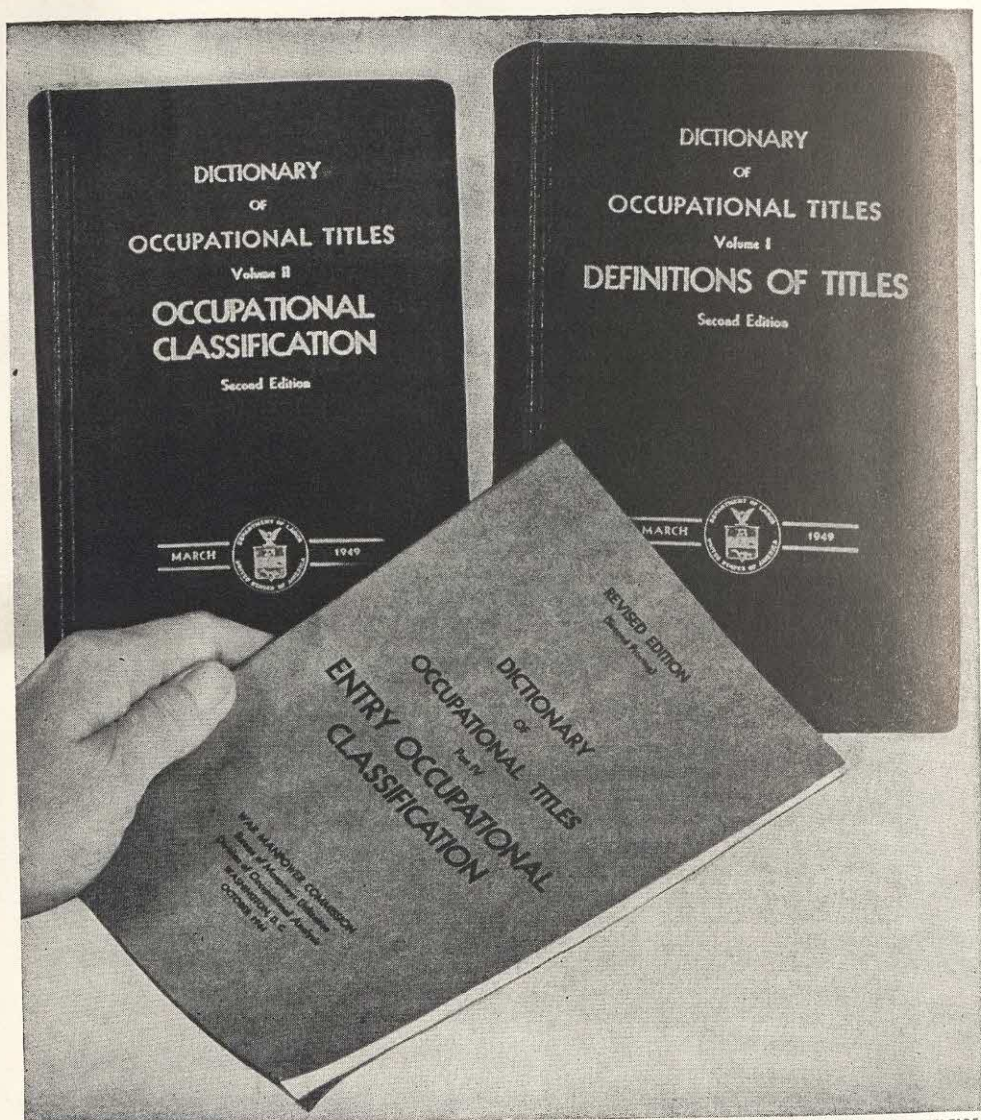
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## OCCUPATIONS AND CAREERS

The Dictionary of Occupational Titles in this volume is part of the equipment of an occupational course. Volume I, Definition of Titles, defines 22,022 jobs and provides code numbers for each job. Occupation mentioned throughout this text are identified by these code numbers in parentheses following the title in the Dictionary, Volume II. Occupational Classification gives a group arrangement of occupations titles according to their code numbers to show in what ways the groups of occupations are related. Groups from are also listed by industries in the industry index of the Dictionary, Part IV. Occupational Classification is a convenient aid for persons who are seeking their job or who are changing employment but do not have skills.





COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**The Dictionary of Occupational Titles**, in three volumes, is part of the equipment of an occupations course. Volume I, *Definitions of Titles*, defines 22,028 jobs and provides code numbers for each job. Occupations mentioned throughout this textbook are identified by these code numbers in parentheses following the title of the occupation. Volume II, *Occupational Classifications*, gives a group arrangement of occupational titles according to their code numbers to show in what ways the groups of occupations are related. Occupations are also listed by industries in the Industry Index of the *Dictionary*. Part IV, *Entry Occupational Classification*, is a counseling aid for persons who are seeking their first job or who are changing employment but do not have skills.

# PART I

## OCCUPATIONAL FORESIGHT

1. *Your Self*
2. *Your Interests*
3. *Your Hobbies*
4. *Everyone's Occupation—Homemaking*
5. *Occupations in Your Community*
6. *Choosing Your Occupation*
7. *Preparing for an Occupation*
8. *Learning a Trade through Apprenticeship*
9. *Getting Your First Job*
10. *How to Study Occupations*





## CHAPTER I YOUR SELF

The degree to which you can get along with people will largely determine the degree of your success in a career. You have probably heard workers talking among themselves about other workers in such ways as these: "He is easy to work with." "She has a fine personality." "He wears well." "She is a gossip." "He is too selfish." "She is a troublemaker." Such likes and dislikes are personal matters.

Two employers would discuss workers more like this: "He is careless." "She is not cooperative." "He is lazy." "She is absent too often." "He is dishonest." "She lacks initiative and ambition." Employers are interested in production. They discharge workers more often for such personality traits as these than for lack of skill on the job.

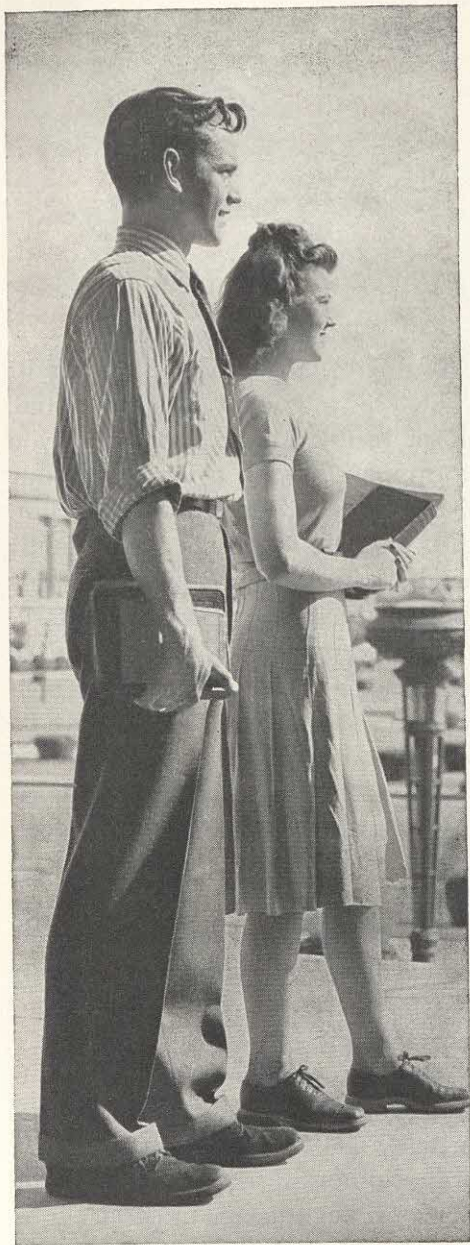
Such personal characteristics, whether good or bad, make each person different from every other person and make up what is called your personality. The kind of personality you have has a real effect on the quality and quantity of work done and on the spirit with which it is done. Let us consider in more detail what determines a good personality.

### YOUR PERSONALITY

Your personality is made up of traits which set you apart as an individual, form your character, and make you a complex human being. Everybody has both good and bad traits, but, just as no two people have exactly similar thumbprints, no two people possess the same personality pattern. However, personality traits, unlike thumbprints, are within your own control, and undesirable traits can be corrected at will. Your personality is largely determined by four things: (1) how you look, (2) how you feel, (3) what you say, and (4) what you do.

**How you look.** In most companies today interviewers actually rate job applicants on their personal appearance as well as on many other personality factors.

Clothes not only make a lot of difference in your appearance, but they actually affect your personality. If your clothes are not comfortable or appropriate, you are unhappy. It is not always the amount of money spent on clothes that makes for a good appearance. It is more likely the right selection of clothes for your personality, the appropriateness of the clothes for the season and the oc-



COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

Personality is determined by four things: (1) how you look, (2) how you feel, (3) what you say, and (4) what you do. For a discussion of how these factors affect your vocational life, see pages 5-10.

casion, and the way you wear your clothes.

Although the kind of clothes you wear is important to your appearance, your grooming and the state of your health also affect the way you look. Neatness and cleanliness are essential for a good appearance, and these are within the reach of everyone.

**How you feel.** The expression on your face, the way you act, and how and what you say all reflect how you feel inside. When you feel well physically, you radiate happiness and spread good will. Your face registers your mood. You enjoy what you eat. You take an interest in the people and the things around you, and you lighten the burden of others. You laugh and the world laughs with you.

A person who does not feel well is likely to dwell upon his own aches and pains because they are foremost in his thoughts. He tells you about his ailments because he is so self-centered that he doesn't realize that his illness is not of general interest. He loses interest in people and in current events because, being physically below par, his own troubles worry him. People excuse the sick from taking part in work or play until they are physically able.

When you are well, your emotions are normal. For example, a loud noise on a still, dark night may temporarily strike fear to your heart. Such fear may result in a frightening terror that will cause a great nervous disturbance in the body of a person





COURTESY "BUSINESS WEEK"

Good grooming in the business world means cleanliness—hair combed, face freshly shaved, shirt and collar clean, suit pressed, and shoes shined. These furniture buyers and the selling agent who is demonstrating a piece of furniture show that they know the importance of careful grooming.

who is not well. However, in a well person fear will vanish when he learns that the noise came from some innocent cause.

Likewise, anger in a person below par physically may take possession and show itself in a contracted brow or a raised upper lip. If the anger is kept up, it upsets the digestion and may actually make the person ill. Also it may cause him to say and do things that he regrets later. People

who lose control of themselves fail to get along well with others. However, anger, like other emotions, can be controlled by a person who is physically well.

The way you feel toward others is largely a matter of control. If you dislike someone on first sight, try to get acquainted with that person to find out whether or not your dislike is justified. You may win a friend.

**What you say.** What you say and





COURTESY "BUSINESS WEEK"

A successful salesperson must be well mannered, well groomed, willing to work, and interested in the customer's needs.

how you say it is vital to the development of your own personality. Those who talk too easily are likely to talk too much. A good listener is always a welcome guest, especially when he encourages others to talk about themselves. Such a person looks interested, seems eager for your thoughts, and pays undivided attention to what is being said. He tries to talk about topics of interest to the other person.

We seldom like egotism in people—"I did this" or "I did that." Those who run on about themselves and their problems soon weary the most ardent listener. A "bore" has been humorously defined as "one who talks about *himself* when you want to talk about *yourself*."

We tend to avoid those who are tactless in their remarks and who injure the feelings of others by brash

comments. Although young and innocent children often make cruel remarks to older people about age, baldness, lameness, or dress, there is little excuse for such blundering when boys and girls reach high school age.

We dislike to have people break in on our conversation. To interrupt a speaker is bad manners. It throws the speaker away from his line of thought and focuses attention on us. Every person deserves his chance to speak. When a speaker has finished his thought, then you may express your opinion.

In general, think before you speak. Have something to say before you say it. If you are shy with others, find some topics that will make interesting conversation. Try them out on occasion—at mealtime with your family or when you are with a close friend.

It is not only what you say, but how you say it. People like to hear well-modulated voices. A voice that is high-pitched is irritating. High voices can be controlled and brought down through practice. A shrill voice, poor diction, and poor English are bad habits of childhood, carried over to the teen years. In the spoken word, these bad habits stand out. Bad speech habits need attention because they will affect your job if you deal with people. Employers are more likely to hire people who have good voices, practice good diction, and use correct English.

**What you do.** Your manners, your

behavior, and what you do records your personality just as much as how you look, how you feel, and what you say. Your conduct shows what kind of person you are.

In playing a game, you learn the rules and follow them. If you play your own rules, you are a poor sport and may start a quarrel. In driving an automobile, you obey the rules of the road. If you choose to drive on the left side of the road, you endanger and anger good citizens. You not only encourage bitter words from other drivers, but you are fined by the community for interfering with the rights of other people.

In the matter of manners, you follow the rules of etiquette. You don't make up your own rules. Manners are simple conventions that also regulate the rights of individuals. On the sidewalk you pass people to the right because custom has decreed that everybody should pass to the right. Although there is no fine if you pass to the left, it is confusing to other people when you do so, and therefore it is ill-mannered.

Good manners cannot be learned overnight. They must become a part of your daily living. Once you begin to apply the rules of etiquette, good manners will become ingrained. You act by force of habit without thinking about it. For example, at the table you wouldn't think of eating with your knife or chewing your food with your mouth open, because no well-mannered person does these things. If you learn the ordinary



rules of etiquette, you should have no difficulty in being well-mannered in any unfamiliar situation, such as eating a boiled lobster, ushering at a wedding, or applying for a job.

Many books on manners and etiquette are published for young people. Become familiar enough with the basic rules so that you will know how to conduct yourself properly in all your relationships with other people. Although good manners are only surface indicators of your personality, you will be grateful for having cultivated them before you go to work. Simplicity of manners and speech come with experience and education.

Poise is another surface trait that is noticed by everyone. Poise means ease in meeting people; being able to carry yourself well; looking alert rather than slouchy, tired, or listless; having confidence in yourself; and

controlling your emotions under all circumstances. Do you know what to do with your hands and arms? Do you know how to stand at ease gracefully? Do you sit down on a chair instead of throwing yourself into it? Do you act and talk deliberately without apparent effort? Such self-control can be acquired with practice. However, it must be sincere and natural, without any theatrical effects. Poise is a good quality to cultivate because such control has much to do with your personality rating as an employee.

What you do and how you act are the subjects of many volumes. Such books usually apply the Golden Rule in all kinds of situations. Most young people have learned the right thing to do at home and in school, but they may not know what is considered good manners on a job. The list below may be helpful.

### HOW TO BE A WELL-MANNERED EMPLOYEE

Be punctual.

Be helpful to those who are learning some skill that you know.

Be interested in other people.

Be courteous to older people.

Be considerate of the feelings of others.

Be quick to introduce your friends.

Be a good sport and a good loser.

Never lose control of your temper.

Never be loud of speech or manner.

Never be ashamed of your family.

Never be rude.

Never be dishonest.

Never sponge, but pay your share.

Never borrow from the other sex, nor often from your own sex.



## YOUR EFFICIENCY

Your report card shows your standing in the subjects you are taking in school. When you take your card home to be signed, you may be elated, satisfied, hurt, or dejected, according to the grades you received. If your grades are poor, you may think to yourself, "I'll be glad to get a job and go to work. Then there'll be no more report cards and grades." But that is not the case. When you go to work, you will probably be rated as to efficiency on the job.

Industries that employ great numbers of workers often make up efficiency ratings on each individual once or twice a year. Supervisors will not only observe your work but also your manners, your attitude, and your cooperativeness. They will study rating systems and try to make a fair rating of you. They are often required to indicate whether you deserve a promotion or a change to some other department or kind of work.

One world-famous department store with thousands of workers rates its employees two times a year. Trained supervisors make the ratings and record the number of days each worker was absent and the number of times each was late within the previous 6 months. Special blanks are used for this purpose, and space is reserved for comments. Some of the factors on which employees are rated are listed on page 12.

Government workers under Civil

Service receive efficiency ratings each year. A few years ago an elaborate system of ratings was used, but the present system provides for such ratings as these on every worker: (1) outstanding, (2) satisfactory, and (3) unsatisfactory.

## YOUR PROGRESS

We know that personality traits develop very early in life and change as you grow older and reach maturity. Even in adult life you hear the expression that a man has "mellowed with age," meaning that he has in some way become more agreeable in dealing with people.

Personality is a combination of factors that can be changed and controlled through life. The earlier you begin to develop good traits and become accustomed to them naturally, the greater are your chances for happiness and success later on.

Study the traits mentioned in this chapter and similar traits that are listed or described elsewhere. Find the factors that seem essential in business. Which ones grow out of your own associations with people at home and in school? You will find that in business and industry the personality traits chosen for investigation and rating are about the same as those demanded in any good society—courtesy, manners, regard for others, getting along well with people.

Persons with pleasing personalities impress others with their friendliness and poise. They become the leaders.

## FACTORS ON WHICH EMPLOYEES ARE RATED

### *Skills and Abilities*

Physical strength and endurance—Is he well and physically able to do the work?

Dexterity and manipulation—Is he neat, sure, quick?

Memory and attention to details—Does he know the sizes, colors, prices, and names of merchandise?

Originality and initiative—Does he have new ideas and methods?

Judgment and planning—Does he use reason and insight?

Expression—Does he express his ideas, written and spoken, in a clear and effective manner?

### *Responsibilities*

Industry—Does he apply himself?

Dependability, reliability—Is he trustworthy?

Cooperation—Does he do his share?

Leadership—Does he inspire confidence and respect?

### *Personal Traits*

Appearance—Is he dressed and groomed appropriately?

Adaptability—Does he get along with people? Does he adjust to changes in duties, conditions, or location?

Tact and courtesy—Does he say and do the appropriate thing? Is he polite and pleasant?

Special use of voice, poise, and dignity—Does he use the required tone, diction, manner, personal bearing, reserve, or distinction?

### *Quality of Work*

Accuracy, thoroughness, and condition of the work—His average error count is:

\_\_\_\_\_ Far above standard

\_\_\_\_\_ Considerably above standard

\_\_\_\_\_ Standard (work ordinarily expected of the employee in order that the job may be accomplished in an acceptable manner in a given period of time)

\_\_\_\_\_ Somewhat below standard

\_\_\_\_\_ Considerably below standard

\_\_\_\_\_ Far below standard

Amount of work—The number of units of work produced in a given time; meeting deadlines or production schedules. Employee's rate of production average is:

\_\_\_\_\_ Far above standard

\_\_\_\_\_ (Same five ratings as above)

### *Supervisor's Recommendation (Check one)*

\_\_\_\_\_ Have him continue on his present job.

\_\_\_\_\_ Increase his responsibilities. Promote him to \_\_\_\_\_.

\_\_\_\_\_ Change his duties without promoting him. Transfer him to \_\_\_\_\_.

\_\_\_\_\_ Give him less difficult work, such as \_\_\_\_\_.

\_\_\_\_\_ Discharge or release him.

\_\_\_\_\_ Increase his rate of pay.

\_\_\_\_\_ Give him further training.





COURTESY U. S. CHILDREN'S BUREAU

A leader of group activities must have a personality that young people like. How he looks, how he feels, what he says, what he does, and how well he can hold the interest of the group are some of the qualities that determine his personality for this kind of work.

At the other end of the scale are the timid, the awkward, the easily embarrassed, the frustrated, the overbearing, or the sarcastic people. Such traits can be overcome. Seldom is a person wholly boastful, deceitful, selfish, or dishonest. Such undesirable

traits vary in degree and according to the situation. For example, boastful John may become quite shy in the presence of adults. Judy may be truthful most of the time but use deceit to avoid punishment. Harold may show selfish traits because he



has not yet learned to share with others. Helen may be dishonest on examinations but not about money matters.

Make a list of the traits that you particularly dislike in others. When finished, begin at the top and for each trait ask yourself, "To what extent am I like that?" You will probably find that you have many of those traits to some degree. Remember those traits checked, and on the next occasion that you are tempted to exercise any of them restrain yourself and think how you can improve the situation by another method. Such control means good poise. While you are approaching maturity in school, you should take stock of your traits to see that you will be properly equipped for employment.

Unfortunately, people do not always recognize glaring faults in themselves. Their feelings are often hurt when some kind acquaintance points out an unpleasant trait for

correction. Nevertheless, heed such warnings; try to recognize traits in yourself that need improvement. If you make an honest attempt to overcome bad traits, you have made a stride forward in improving your personality.

More than 2500 years ago in Greece, Socrates originated the slogan "Know thyself." To understand yourself better leads to a better understanding of others. Nobody thinks or feels exactly the same as anybody else. We are all individuals. However, our criticisms of others are likely to concern more what they say and do than what they think or how they feel. Actions speak louder than words. Remember that nobody can read your mind. You are the only one who really knows what you think or how you feel.

Oh, wad some Pow'r the giftie gi'e us  
To see oursel's as others see us!

ROBERT BURNS

### For Discussion

1. What general traits do employers look for in their employees?
2. Name four factors that largely determine one's personality.
3. Explain how a person's appearance is a part of one's personality.
4. What factors determine how a person feels?
5. Explain how personality is often judged by what one says.
6. What are some essentials of good manners in business?
7. Name some personal traits upon which department stores rate their employees.
8. Mention some ways in which a person may improve his personality.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern personality traits.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Make a pencil copy of a photograph of a well-known person to show how personality traits can be revealed in the face. Bring to class newspaper cartoons of persons that you recognize.
<b>BUSINESS:</b>	What personality traits do employers prize most highly?
<b>ENGLISH:</b>	Demonstrate how the art of conversation can improve personality.
<b>HEALTH:</b>	Expand the topic—Good Health Is a Prime Factor in Personality.
<b>HOME ECONOMICS:</b>	Discuss the importance of good grooming for personal success.
<b>LANGUAGES:</b>	Explain how a knowledge of a foreign language helps one in his personal conversation and reading.
<b>MATHEMATICS:</b>	Figure the annual cost of being well groomed: care of hair, teeth, and clothing; cosmetics; laundry; and other necessities.
<b>MUSIC:</b>	Show how one's reaction to different kinds of music expresses his personality.
<b>OCCUPATIONS:</b>	Discuss the importance of getting along well with people on the job.
<b>SCIENCE:</b>	Make an oral report on the personalities of some of our great scientists.
<b>SHOPWORK:</b>	What personal qualifications are most needed by shopworkers?
<b>SOCIAL STUDIES:</b>	How do personalities of workers in the amusement world differ from those of physicians, ministers, and lawyers?

9. Try to name two persons who have similar personalities.
10. How can a bad character trait, such as selfishness, be controlled or corrected?

### What to Read

- Behave Yourself*, Betty Allen and Mitchell P. Briggs. J. B. Lippincott Company, Philadelphia, 1950. 167 p.
- Better Ways of Growing Up*, John E. Crawford and Luther E. Woodward. The Muhlenberg Press, Philadelphia, 1948. 270 p.
- How Personalities Grow*, Helen Shacter. McKnight & McKnight, Bloomington, Ill., 1949. 256 p.
- How to Get Along with Others*, Bernice L. Neugarten. Science Research Associates, Chicago, 1952. 40 p.
- Living in the People's World*, L. V. Roth, S. M. Hobbs, and W. J. Greenleaf. Laidlaw Brothers, Inc., New York, 1949. 767 p.
- Manners Made Easy*, Mary Beery. McGraw-Hill Book Company, Inc., New York, 1954. 331 p.
- Men Who Make Your World*. Overseas Press Club of America. E. P. Dutton & Co., Inc., New York, 1949. 319 p.
- Personal Problems*, John B. Geisel. Houghton Mifflin Company, Boston, 1949. 430 p.
- Personality in the Making*, Helen L. Witmer and Ruth Kotinsky, editors. Harper & Brothers, New York, 1952. 454 p.
- Psychology for Living*, Herbert Sorenson and Marguerite Malm. McGraw-Hill Book Company, Inc., New York, 1948. 637 p.
- This Way, Please*, Eleanor Boykin. The Macmillan Company, New York, 1948. 350 p.
- Understanding Yourself*, William C. Menninger. Science Research Associates, Chicago, 1948. 52 p.
- Ways to Improve Your Personality*, Virginia Bailard and Ruth Strang. McGraw-Hill Book Company, Inc., New York, 1951. 249 p.
- You and Your Mental Abilities*, Lorraine Bouthilet and Katharine M. Byrne. Science Research Associates, Chicago, 1948. 48 p.



## CHAPTER 2 YOUR INTERESTS

In any family group the likes and dislikes of the several members may differ widely. Their interests and tastes vary in matters not only concerning food, dress, friends, and entertainment but also with respect to occupations.

**Forced interests.** Joe's father was a physician and one of the leading citizens of Farmville, a small midwestern town. From the time that Joe was 5 years old his father had told him: "I'll send you to a good medical school, and when you become a doctor you can take over my practice."

Joe heard the story many times, and he realized, even as a boy, that it was a good opportunity. However, after he had watched his father's patients call for treatment and observed the work in the small laboratory, he knew that he could never find an interest in medical work.

In high school Joe prepared for college and was a member of the debating team which had won statewide honors. Because of his interest and ability in debating, several local citizens suggested that he would make a good lawyer. Secretly, Joe longed to study law, but he knew that his father would be against it.

One day before graduation, however, Joe told his father of his preference for law and of his dislike for medical work. The doctor couldn't understand such a decision. Here was a medical practice waiting for Joe, medical training for the asking, and yet Joe was turning it down. Joe tried to explain that, after all, a person goes into an occupation because he has some interest or liking for it, and he knew that he just couldn't stand dealing with sick people all the time. His father felt hurt and couldn't agree with Joe without investigating further. So he went with Joe to interview several of his friends, including the school counselor, some doctors, and some lawyers. These friends were fair-minded about the problem and agreed that it would be unwise for a boy to prepare for medicine if he had no interest in the work. They felt that Joe's ability also pointed more to legal work than to medicine. The doctor finally had to change his mind and reluctantly give in to his son.

It often happens that a father (or mother) believes that he knows better about his son's future than the son himself and insists that the boy

enter the family business. The father believes that if other boys can learn the business, so can his son. However, the carrying out of such a plan usually results in one of three situations: (1) If the boy has an interest and ability for the business, he chooses wisely and pleases his father. (2) If the boy lacks interest but is otherwise qualified and dutifully prepares for the work, he may become a mediocre worker. (3) If the boy has neither interest nor ability for the work, he is likely to fail during his preparation, will never meet the job requirements, and eventually must seek other employment. Interest is the driving power necessary to success.

**Real interests.** There are some things that you really like to do without being urged. When you work at such activities, time flies so fast that you forget to watch the clock. When Mother calls, "Dinner is ready," do you ever reply, "In just a minute when I finish this"? Your real interest holds your attention even when food is waiting. An interest is simply something that you like to do. Your interest may concern many areas, such as using tools, satisfying intellectual curiosity through study, or appraising what you see. You prefer some school subjects to others. You prefer some hobbies to others. These preferences show your real interests.

Each year, as you grow older, you pick up new interests. As a child your interests were simple. You were learning about tools and materials

that adults use, and you liked to find out what made things tick. You were learning your interests as you investigated new experiences. New interests are discovered as you meet new experiences. For example, a boy sees television demonstrated for the first time. He is interested and wants to know how it works. He doesn't know whether or not he has a real interest until he makes some study of it. If you think you have an interest in something, you should try it out. If you like it, you will continue to be interested. If you dislike it, you will drop it. The things that you continue to like are your real interests.

But you may have hidden interests that you do not recognize because you have had no opportunity to try them out or use them. You will recognize them at some later time as you have new experiences. Some of your very early interests—dancing, swimming, drawing, singing—may be real interests throughout life, but you adapt them to new situations that you meet in community living. Your interests branch out in all directions, some further than others. You do not have just a *single* interest. If you could catalog all your interests, you would probably find some pattern to them. One or two would probably stand out beyond the others. The pattern might not necessarily be clear-cut, but it might show several interests that predominate. With some people a breadth of interest is more important than a concentrated interest in a few nar-



row fields. A Jack-of-all-trades, however, is a type whose breadth of interest is so wide that he is a master of nothing. An editor must be well informed on many subjects and fields of work. On the other hand, a chemist whose main interest in life is to discover a new compound may devote his life happily to work in a laboratory and have few other activities.

If you have a hobby, you have a real interest. For example, you may like to carve wood or linoleum blocks, even though your carvings appear crude to an expert. What you produce, of course, depends largely upon your skill as well as your interest. Nevertheless, your efforts satisfy you at the time because you are developing an interest. You produce what you feel is good for an amateur. You like to use the tools and materials. You are doing creative work. The work is fun in your estimation.

**Developing interests.** The way to develop new interests is to try out new activities. Unless you try out something, you do not know whether or not you like it and can develop a real interest in it. By the time you are 16 years of age, you will have experienced many new activities and know quite a number of your real interests. Experts in interest measurement believe that after 16 years of age our basic interests change little. They mean that as we grow older we adapt many of our basic interests to new situations rather than discover brand new interests. Some deep-

seated interests, learned early in life, may tend to persist to old age and come to the surface many times in different aspects. We express our known interests in different ways.

For example, in elementary school a boy may play baseball with his companions on a vacant lot. In high school and college he may make the baseball team. After he is employed on a job, he will find recreation in attending professional baseball games. In later life he will probably follow the ups and downs of players on the big leagues as reported on radio, television, or in the sports pages of the newspaper. In other words, at any age he has an interest in baseball.

In developing our real interests, we sometimes learn to do jobs that we have little interest in of themselves. Almost anyone can learn to write on a typewriter because learning to type is a simple mechanical process. Some persons dislike any form of mechanics, yet they can learn to type if they keep at it. Once the keyboard is learned, they can apply their learning to a development of their real interests. The real interests may be writing personal letters, writing short stories for publication, using the typewriter as a tool to produce some work in which they have a high interest, or even getting a job as a typist.

Any job has certain uninteresting elements that go along with the work—some unpleasant tasks that have to be done. A successful worker, however, develops a liking for his job by





COURTESY BLAIR ACADEMY, BLAIRSTOWN, N. J.

Interest in band music is merely a liking for band music. Skill in playing a band instrument comes only after much practice. The amount of skill that one develops depends upon his aptitude—that is, his capacity to develop the skill.

finding some means of expressing his interests in whatever duties he performs.

**Interests, aptitudes, and skills.** Do not confuse interests, aptitudes, and skills. They are all different and need to be well understood.

*An interest is merely a liking for something.* It is something that you prefer over other things. You may like music but not be able to play or sing. You may like good food but not be able to cook. You may like to study houses, yet be unable to draw

floor plans. However, you can show an interest in any of these things.

*An aptitude is your natural ability to do something.* An aptitude is more important than an interest because without the aptitude for a certain kind of work you may not be able to develop your interest in it. You may like music and be able to sing popular songs. You may like good food and be able to prepare simple dishes. Or you may like to study houses and be able to sketch rough floor plans. An aptitude, however, is not a skill



but, rather, a natural ability which may be developed into a skill which will be useful on a job.

*A skill is an accomplishment.* It is the ability to do a job well. Usually a person with an interest and an aptitude for certain work learns how to do the work carefully and successfully. It may mean playing the piano well, preparing good food in the kitchen, or making house plans accurately to scale.

Mary and Jane both had an *interest* in playing the piano. Mary, who had never had any piano lessons, learned to play "by ear." She would sit down at the piano, pick out certain notes, and combine them so that the resulting music was creditable. She has an aptitude, as well as an interest, that can be developed into a skill. If she takes piano lessons, she might become an accomplished pianist. Jane, on the other hand, was interested in learning to play the piano, but she had no aptitude for music. Her family paid for her piano lessons, but she made very little progress. She was unable to develop enough skill to play the piano well and finally had to abandon her lessons. Without an *aptitude* for music, you cannot become a good piano player simply because you have an interest in piano music.

In choosing your occupation, then, be sure that you have, in addition to an interest in the work, some aptitude for it. With some aptitude for the work, your chances are good for developing *skill* in it.

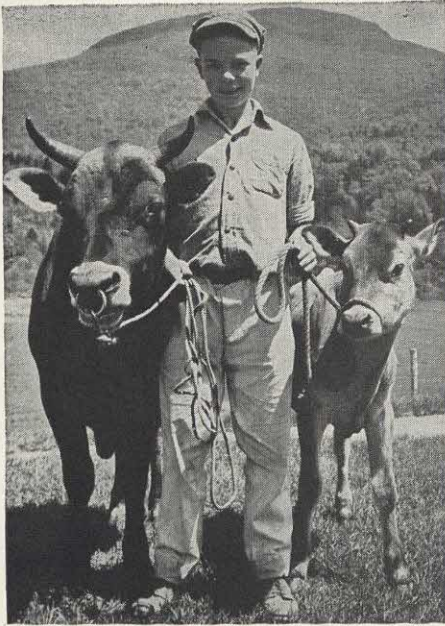
**Areas of interests.** Nobody knows all of the interests there are in the world because there are too many. Students have attempted to classify some of the interests of people into certain large areas. A few of these areas are indicated by italicized words and described briefly in the next paragraph.

*Reading* furnishes a major interest for many people who keep in touch with the news, learn what is going on in their work, or read merely for pleasure. Some people like *writing* letters, keeping a diary, or writing for pleasure or publication. *Numbers* interest certain types of persons who like to solve numerical problems, measure materials, keep books, or account for earnings and expenditures. *Art and design, music, drama, or dancing* interest some groups with cultural tastes. Businessmen find keen interest in *commercial work* and business *competition*. Women are better homemakers than men because of their interest in *domestic duties*. *Agriculture* interests the farmer because he enjoys an outdoor life, dealing with growing things. Some people like *mechanical work*—using machines and repairing and replacing parts.

In all realms of interest some people like *fine work* carefully done, while others like *gigantic tasks* on big projects. For example, one artist paints miniatures on buttons; another artist paints a huge advertising sign on the wall of a ten-story building. Both are artists who use paints

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COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY HUNTON

Outdoor interests of a young boy may lead him to farming as a vocation in adulthood. This 4-H Club boy shows a special interest in his registered Jersey calf and 2-year-old bull. Farm boys and girls all over the country are organized into clubs with government agents as advisers concerning their farm projects.

and brushes, yet neither has any interest in the other's work. In the mechanical field a watchmaker repairs ladies' tiny wrist watches, using an eyepiece to magnify the works; a repairman of locomotives in a railroad shop works with great accuracy on the wheels of a locomotive. Although both work with wheels, neither has any interest in the work of the other.

These areas of interest are merely suggestive but represent several of the well-known interest areas. You

probably have a preference among the interests mentioned above. If you do, then remember it when you finally choose your occupation, since interests are powerful influences for making the best use of your abilities.

**Knowing your interests.** We learn many things through the expensive and wasteful trial-and-error method. We may try out something that seems interesting, only to find that it takes more interest or aptitude than we have or more skill than we can attain. We lose interest quickly and seek other activities that we can do more easily. The more interests and aptitudes we can couple together, the sooner we get started on the solution of our future occupational problems.

You may have a considerable interest in engineering, but little or no natural ability, or aptitude, in algebra. You know that without algebra you cannot study engineering. Your motive force for learning algebra, then, is strengthened because you want to study engineering. Now suppose, for example, that after trying very hard to learn algebra you find that it is beyond you and that you are failing. In most cases it means that you must give up an engineering career, drop algebra before you fail the entire course, and put your energies into something for which you have both interest and aptitude.

If you think back over your past, you will remember certain things in which you had an interest at one





COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

An interest in chemistry, physics, or biology in school may lead a young person into scientific work. Many young people who have developed this interest in school enter such professions as engineer, physician, trained nurse, dietitian, or scientist, or such semiprofessions as dental hygienist, laboratory assistant, medical technician, or tester (various products).

time—dolls, chemical outfits, making candy, selling magazines—that you have now put aside. An interest in such things is sometimes more persistent than you think. An interest in dolls has led to an interest in fashions. An interest in chemical outfits has led to scientific careers. Many such early interests have broadened in later life into business careers.

Nobody knows your real interests as well as you do, but you may be in

doubt as to how to classify them or group them. Turn to the list of hobbies on page 40 of Chapter 3 and write down those that you believe you would enjoy. Then try to group those hobbies, or interests, according to the large areas given in the table on page 24.

When you have finished, consider the school subjects that you enjoy most, and in the same way try to fit them into groups. Then think over

all of your activities, both in school and out—part-time jobs, church work, clubs, sports, entertainment, and friends—and try to fit those interests into the large areas mentioned. Even though your final results may not be very accurate, they will help in a modest way to prevent the pitfalls of the trial-and-error method.

**Measuring your interests.** There are many measuring instruments for weighing and measuring goods that we buy; otherwise, we would not get

our money's worth. Such ordinary measuring devices as scales, the yardstick, the bushel, etc., give us standard measures of goods. There are also a number of interest tests—or “interest inventories,” as they are called—which have been devised to help measure or show the direction of our interests. A store manager takes an “inventory” of his goods every year or oftener. An inventory simply means taking a “count of stock.” That is, he lists all of the goods in his store to find out exactly how much and what

### RELATIONSHIP OF INTERESTS TO OCCUPATIONAL FIELDS

<i>Type of Interest</i>	<i>Occupational Field Suggested (Major Occupational Group)</i>
Academic (school work and study)	<b>Professional</b>
Literary (reading and writing)	<b>Professional</b>
Scientific (laboratory work and discovering new information)	<b>Professional</b>
Computational (mathematics and numbers)	<b>Professional</b>
Aesthetic (art and design, playing and listening to music, rhythm and dancing)	<b>Professional</b>
Social service (helping persons solve their problems)	<b>Professional</b>
Commercial (business enterprise)	<b>Clerical and sales</b>
Computational (mathematics and numbers)	<b>Clerical and sales</b>
Clerical (office work, filing, keeping records)	<b>Clerical and sales</b>
Domestic service (homemaking and housekeeping)	<b>Service</b>
Service, except domestic (waiting on customers and carrying out orders)	<b>Service</b>
Agricultural (farm work and raising crops and animals)	<b>Agriculture, forestry, fishing</b>
Outdoor interests (work in the open, regardless of weather)	<b>Agriculture, forestry, fishing</b>
Mechanical (work with your hands, using tools and machines)	<b>Skilled</b>
Creative (being original in whatever work you do)	<b>Skilled</b>
Mechanical (work with hand tools and operating machines)	<b>Semiskilled</b>
Manual (work with your hands at heavy or light jobs)	<b>Semiskilled</b>



kind of merchandise he has on the shelves. In a similar manner, you may check many of your interests by means of inventory blanks.<sup>1</sup> These interest inventories consist of little questions about different activities. You check those you like best. There are no right or wrong answers. There is no typical interest pattern. Whatever you answer merely indicates the direction of your interests, just as a weather vane indicates the direction of the wind.

The interpretation of these interest inventories, however, is important, and your teacher should explain what the results mean after the blank is completed. Such inventories do not show aptitudes or skills but merely a liking for certain activities. They do not show the occupational fields you should enter but merely the fields that you might enjoy if you have the necessary aptitudes for them and are able to learn the skills for the work.

**Interests and occupations.** There is a close relationship between your interests and the occupational field in which you can be successful. Certain interests have been classified accord-

<sup>1</sup> Among the interest inventories that teachers use are Brainard Occupational Preference Inventory; Kuder Preference Record; Lee and Thorpe Occupational Interest Inventory; and Strong's Vocational Interest Blank (one for men and one for women).

ing to major occupational groups and are listed in the table on the opposite page.

It must be remembered, however, that an interest alone is only *one* indicator for success in a field of work. Aptitudes and skills are also necessary. Each of the six major occupational fields mentioned in the table requires certain aptitudes and skills. The unskilled occupational group is not included because interests, aptitudes, or skills are not important in this area.

Whether or not you have the necessary aptitudes in a certain area will be discovered later as you study more about yourself and about the occupations. At the moment a good start on locating the occupational group where you will find the most satisfaction is to look over this list and compare your interests with those in the table. In this way you should find the occupational groups in which your interests lie.

You may find that your interests definitely lie in one major group. Or you may find that you have high interests in several groups. There are jobs which will satisfy many of your interests, but you must be able to qualify for such jobs through your personality, physical traits, learning the necessary skills, and many other factors.

### For Discussion

1. When is it unwise to follow father's footsteps in choosing a career?
2. How do real interests affect what we do to earn a living?



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that arouse personal interests.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Study the life of an artist and show how his early interests determined his career.
BUSINESS:	Bring to class interesting advertisements cut from magazines, assemble them as an exhibit, and vote on the one that holds the greatest sales appeal.
ENGLISH:	Explain why <i>Alice in Wonderland</i> continues to arouse popular interest.
HEALTH:	What professional sport holds the greatest interest in your community and why?
HOME ECONOMICS:	What can be done to a common food, such as mashed potatoes, to arouse the interest of persons to whom it is served?
LANGUAGES:	Which is more interesting and why—a French song sung in French or the same song translated into English?
MATHEMATICS:	Create an interest in arithmetic by learning a number of short cuts for multiplying numbers in your head.
MUSIC:	Explain the popular interest in so-called “modern” music as opposed to the traditional classical music.
OCCUPATIONS:	Select one occupation and tell why it holds a high interest for you.
SCIENCE:	Demonstrate and explain some simple scientific “trick” that might be used for entertainment on the stage.
SHOPWORK:	Why does shopwork in a vocational school interest many boys and girls more than regular academic work does?
SOCIAL STUDIES:	Make a poll of teachers to find out what their interests were during school days. Is there any relationship between such interests and the subject field in which they teach?

3. To what extent do our basic interests follow us through life?
4. How do we acquire new interests?
5. Explain the difference between (a) interests and aptitudes; (b) interests and skills; and (c) aptitudes and skills.
6. Discuss some of the various large areas of interests.
7. Can we measure our interests by tests?
8. Does the score on an interest inventory show what occupation we should enter?
9. Are interests ever the same as aptitudes or skills?
10. Discuss some of the interests required in order to work in different occupational areas.
11. Which of your interests do you feel sure of? Why?

### What to Read

- Career Planning for High School Students*, William J. Reilly. Harper & Brothers, New York, 1953. 110 p.
- Discovering Your Real Interests*, G. F. Kuder and B. B. Paulson. Science Research Associates, Chicago, 1949. 48 p.
- Guide to Career Success*, Esther E. Brooke. Harper & Brothers, New York, 1947. 228 p.
- Planning Your Job Future*, Emery Stoops and Lucille Rosenheim. Science Research Associates, Chicago, 1953. 40 p.
- Your School Clubs*, Nellie Zetta Thompson. E. P. Dutton & Co., Inc., New York, 1953. 317 p.

## CHAPTER 3 YOUR HOBBIES

You will spend a third of your life at work and a third in sleep. What you do with the remaining third depends to a great extent on your home life, your recreational life, your religious life, your activities as a citizen, your friends, where you live, how you dress, how you eat, and how well educated you are.

You will probably have more leisure time than your parents had because today everybody tends to have more free time than people had a generation ago. Hours of work are now regulated. Everything that we consume can now be produced in a 5-day week. The Government and many industries are on a 5-day, 40-hour week. Labor-saving devices, such as washing machines and vacuum cleaners, now common in the home, give families more free time. Living conditions in general are less demanding of time. These trends point to a future in which you, as a worker, will have a greater amount of leisure time in which to do the things you really want to do. After working hours, people like to relax and do as they please. Relaxation, however, not only includes such things as taking a nap, watching television, or going to

a basketball game; it also includes any activity that is different from the regular routine of our daily jobs. The tired businessman often finds relaxation and recreation in playing golf, gardening, or mowing the lawn. After being engaged in sedentary work indoors all day, he finds relaxation in outdoor exercise.

Today much thought is being given to suggestions for good use of spare time for your future and the future of others. Engaging in a hobby seems to be one way to make good use of spare time after school or work. A hobby is fun because while you are doing it you are your own boss, you are using your own ideas to create something, and you can make your own plans. Even though you select your hobby the hard way—by the trial-and-error method—you will be gaining skills and cultivating habits that will be useful to you later in regular employment. What hobby you choose is strictly up to you.

You choose a hobby in something that interests you. You like to work at it and plan it out by yourself. You choose an occupation, likewise, in a field that interests you. You hope to





COURTESY SOUTHERN PACIFIC RAILWAY

Model trains provide a fascinating hobby for old or young, not only at Christmas time but the year around. Some hobbyists are so exacting that they insist on having every part of the train built to scale.

succeed in it, even though you very likely must carry out somebody else's ideas and plans. The chief difference between a hobby and an occupation is this: A hobby is something you carry on in your own spare time without any thought of pay or reward, but an occupation is something in which you exchange your services during regular hours for money.

Often young people capitalize on their hobbies by actually finding employment in fields related to them. Special knowledge, understanding, and experience gained through hobbies are worth money to certain employers who may need the special qualifications acquired as a result of work on a hobby. Hobbies and occupations have much in common.

### VALUE OF HOBBIES

Hobbies contribute to one's personality. They reveal not only your interests but also your aptitudes. They bring satisfaction through self-expression, relaxation, something to do, and development of skills and appreciation.

**Hobbies for self-expression.** Most people crave some form of self-expression—some means of trying out their own ideas. Many workers have no opportunity on the job for self-expression or creative work. For example, a man on an automobile assembly line must perform the same task over and over again on different cars as they move along the line. He

has little chance to participate in the making of the car as a whole or of contributing any creative ideas to the work. For relaxation after the day's work, however, he might very well choose to build miniature automobiles. If this seems a strange way to relax, consider that, with such a hobby, he understands what he is doing, he is his own boss, he creates new designs, tries new methods, and develops any idea he pleases to his own satisfaction. In this way he finds the self-expression that he does not get in his work and, at the same time, he manages to make his daily work more meaningful.

A person who creates something by hand feels a certain pride when others exclaim, "Did you make it all by yourself? Who taught you how? It shows good workmanship." Self-expression through hobbies has led to inventions, especially when men have applied their knowledge from their daily work and ideas from a spare-time hobby to improve some machine or gadget.

**Hobbies for a safety valve.** A safety valve in a steam boiler prevents the boiler from blowing up under pressure. When a certain pressure is reached, the valve opens and the steam escapes. When things go wrong during the working day, a person needs a safety valve in the form of a hobby to release his pent-up emotions. A worker who comes home worried over a problem is likely to brood over it unless he has a special interest or hobby to





COURTESY U. S. CHILDREN'S BUREAU

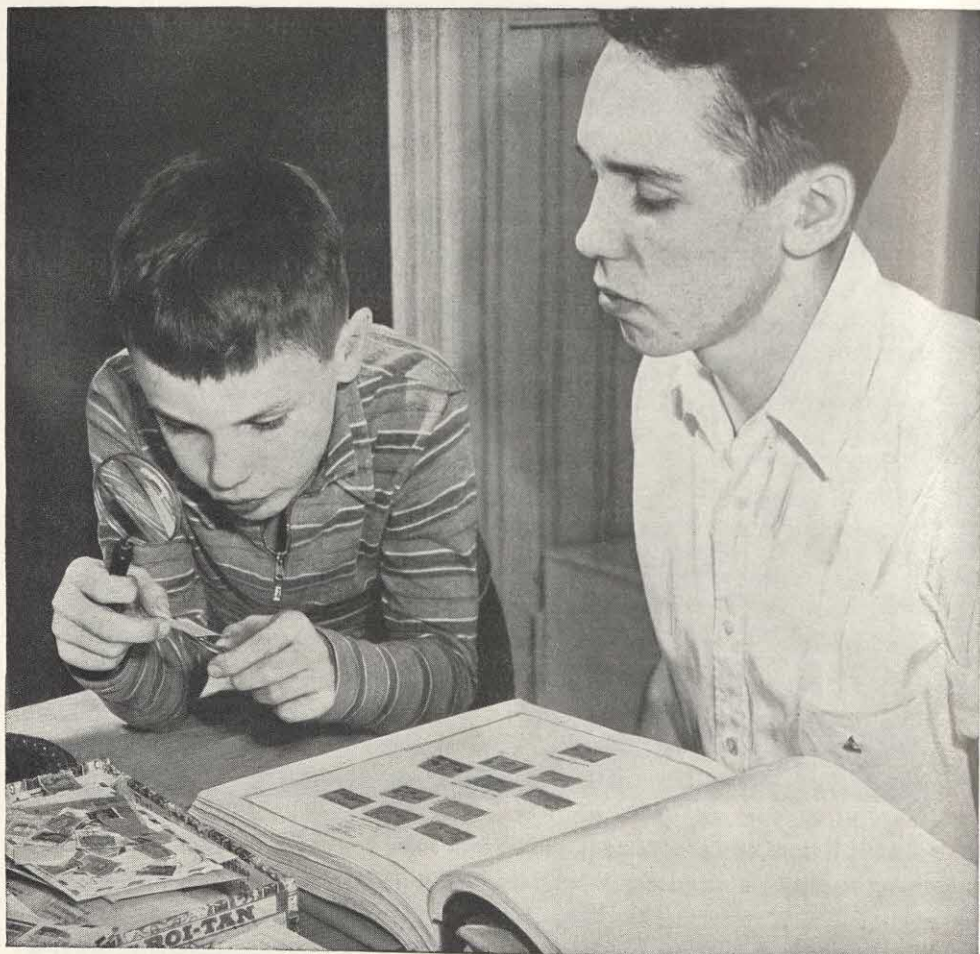
Taking music lessons and practicing is a hobby for some young people who are interested in learning to play an instrument. When boys and girls learn to play well, they not only are able to furnish enjoyment for themselves and others, but they may also be able to earn money with their skill. Many boys help to earn their way through college by playing part time in bands or orchestras.

take up his time and take his mind off the day's events. A hobby gives him a change of interest to occupy his attention and to improve his own feeling of well-being.

**Hobbies during illness.** Hobbies have long been recognized by hospital authorities as having curative value to help patients get well faster. Patients who are confined to bed or those whose activities are limited find that time passes slowly without

something to do. Some simple hand work that can be done at the bedside takes their attention from their troubles for a little time at least. In hospitals this work is known as "occupational therapy," which means a "cure through something to do." It is really a hobby carried on at the bedside. Most hospital patients are eager to use their hands to knit, weave, draw, paint, or make things. The handicrafts chosen vary accord-





COURTESY LIBRARY OF CONGRESS

Stamp collecting is a hobby that requires little space. It is good training for many kinds of work that require examining, identifying, and classifying things. Adhesive stamps were first issued in the United States in 1847. In recent years many commemorative stamps have been issued, honoring people or events. Stamp collectors sometimes become dealers in foreign or domestic stamps and materials for collections.

ing to the patient's interest, ability, and physical condition. Doctors recommend occupational therapy along with medical treatment. Young women who teach patients such skills are themselves experts at many hobbies, with college training in crafts and medical social work.

**Hobbies to develop skills.** You learn to do by doing. For example, when a girl makes her first dress, a great deal of effort and close attention to details is involved. And probably a number of errors result before the dress is finished. Her second dress is a much easier matter. As she makes

other dresses and develops skill in sewing, she gains confidence that she has never known before.

Most people are awkward when first learning to do things with their hands—taking part in sports, sketching, painting, playing musical instruments, or cooking. As they gain experience in any one, they acquire more skill in it until they can do it without apparent effort.

#### **Hobbies to develop appreciation.**

Hobbyists often become authorities in their fields. They study their hobbies, write and speak about them, and even give instruction to others. Ideas for hobbies may be discovered through reading, from stores that sell materials, and from persons who have hobbies.

One woman became an authority on Early American glass simply because she studied old glass. She collected many specimens, read all she could find about glass, and profited by her mistakes in collecting. In this way she learned to appreciate good glass and to distinguish the good from the bad. One of the desirable values of hobbies—whether they involve work with glass, art, music, or shopwork—is that they teach appreciation. When a hobbyist compares products, he learns to identify the good, reject the bad, recognize values, and appreciate worth.

#### **REQUIREMENTS OF HOBBIES**

Certain hobbies require health, energy, and physical activity. Exam-

ples of these are winter sports, such as skating and skiing, and summer sports, such as swimming and tennis. Or a hobby may be a quiet, restful amusement, such as playing chess, studying art, writing poetry, or collecting stamps.

Some hobbies cost no more than the time needed to work on them. Nature and friends may provide the necessary materials. Books describing them may be obtained from any good library. Or hobbies can be expensive and run into a great deal of money. Those who collect rare jewels or first editions of books must be prepared to spend large sums for new items to add to their collections.

Certain hobbies require little space. Stamp collections or herbariums (pressed flowers and plants) can be carried on within the covers of a portfolio. Other hobbies, such as collecting antique furniture, may require considerable space for storage or display.

A hobby may require little time or effort to carry on. Games, photography, fish culture (home aquarium), and certain crafts consume little time. But hobbies like model making, raising small animals, and bench work may demand much time and energy and the help of other people.

Whatever the requirements, the hobby you choose must be an outlet for *your* interest and must be fun to *you*. You will find a hobby relaxing only if you work on it with a definite plan in mind and have enough inter-



est in it to enjoy it. There is an old slogan: "Work consists of whatever a body is obliged to do. Play consists of whatever a body is NOT obliged to do."

### COLLECTING AS A HOBBY

**Accumulating or collecting?** The instinct to accumulate things is common in most of us. It is said that even crows and magpies accumulate small objects that they steal and hide away in their nests. Small children have their boxes of trinkets and other treasures gathered from here and there. A schoolboy will often turn his bedroom into a museum for displaying all sorts of souvenirs from places that he has visited.

Pete was no different in this respect from other boys of his age. His room was filled from one end to the other with an odd assortment of miscellaneous objects that friends had given him or that he had picked up by himself. In a large scrapbook he pasted pictures of notable people and places of interest that appealed to him. Posters and signs hung on the walls, and home-made shelves held a display of shells, stones, horse-shoes, bits of wood, and bottle tops.

Any visitor to Pete's house had to see his "collection," and Pete would explain the items with brief stories:

"I got this rock from the top of Douglas Hill. Isn't it a beauty?"

"This bolt came from a Liberty ship."

"My cousin in Arizona sent me

this stuffed horned toad. He would be a good pet if he weren't stuffed."

"I picked up these shark's teeth on a beach in Chesapeake Bay. They are fossils."

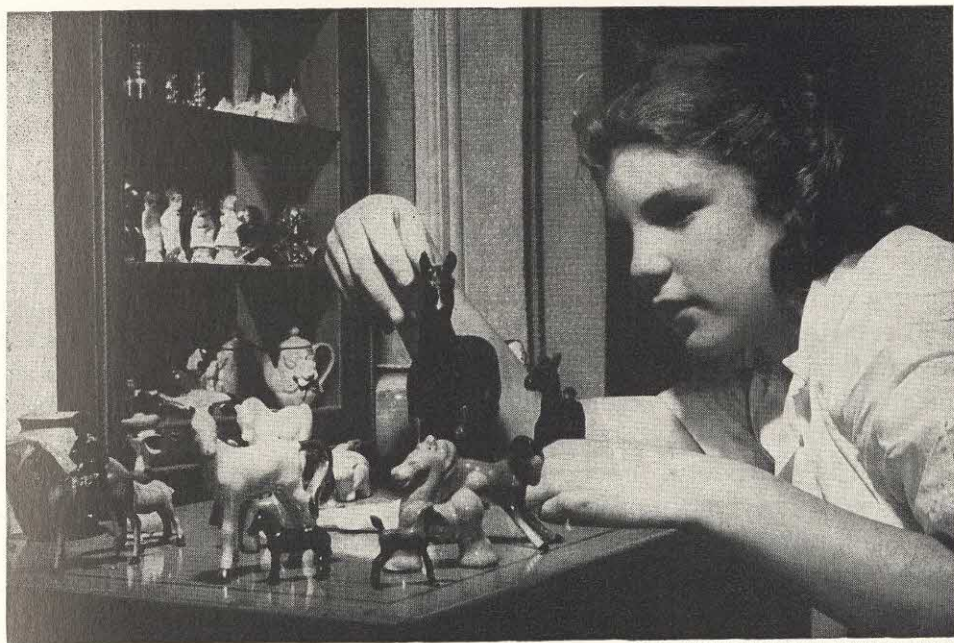
"My brother sent me this paper money from Japan."

"Interesting," one visitor said. "When I get home, I'll send you some mineral specimens."

Pete's museum continued to grow without purpose. The accumulation of unrelated objects could never be organized or classified. As generally happens, it grew until his mother finally demanded a house cleaning. After that he began collecting minerals with a purpose, learning how to classify them, what they were used for, and where they might be found. He could soon identify many minerals and discuss their value.

**What to collect.** Collecting as a hobby should mean collecting with a purpose. What to collect depends upon the person and his interest in the objects—old or new. If his collection will arouse interest, the collector must study his subject well and know more about the specimens than the average person. First he must know the common varieties, learn how to classify them, and find out what to look for. Soon he learns to identify the rare specimens when he sees them. Through his experience and study, he learns one very important lesson—what NOT to collect.

Roger collected coins. He had a very good exhibit of one-cent pieces



U. S. CHILDREN'S BUREAU, PHOTO BY BUDLEY

Collecting may depend upon the interests of the hobbyist. For instance, someone who likes horses might start a collection of figurines of horses of various sizes, colors, and materials. The value of each piece would probably depend on its workmanship and rareness. Collectors soon learn to appraise items that they come across while pursuing their hobby.

classified by dates. His collection of Lincoln pennies was full because these late coins are easy to get. Several of the Indian heads were missing and some of the earlier coins.

He explained: "The value of the coins does not necessarily depend on age. There were no cents coined in 1815 or 1835, and those dated 1793, 1799, 1804, and 1856 are very rare. In some years the coinage of cents was small, and the coins dated in those years are valuable because they are scarce. The rare coins are purchased by dealers to sell at a profit. Although each coin has a face value of one cent, the rare coins are worth

much more as collectors' items. Jefferson proposed the dollar as a unit of national coinage, the smallest coin to be of copper."

Sally collected dolls. She explained that she didn't "play house" with them. She studied them, learning about their history and how they reflected the lives of the people in the different countries from which they came. Their costumes told something of the nature of their makers and their occupations. Her collection included antique china dolls, dolls from the hills, and peasant dolls from overseas. Sally's friends sent her many different kinds



of dolls from many distant lands. After a while her collection became large enough to attract considerable local attention, and newspaper cameramen came to take pictures of her exhibit. This publicity led Sally to accept invitations to talk before local clubs and display her collection. She made a real study of her hobby, and she learned to tell the history and meaning of her unusual collection in an interesting and entertaining manner.

If you have a hobby of collecting things, you know how important it is to make provision for storing them. Collections should not be kept in the open to gather dust or become damaged. Collectors make cabinets, build special shelves, or provide boxes to show off their collections. You will find the things you collect of much more interest and value if you display only a few at a time and have a reserve put away in an orderly manner.

**How much to spend.** A collecting hobby does not need to run into expense. Nature provides an abundant source for many satisfactory exhibits that are free for the taking. Wild flowers from the woods and fields may be collected, pressed on loose leaves of a notebook, and classified. The study and identification of trees and their leaves make another good nature hobby. The study of birds, birds' eggs, butterflies, insects, sea shells, seaweeds, winter bouquets, living plants, and hundreds of other free offerings of nature make good

hobbies. Good books on botany and biology for beginners are within reach of all at the local library. Nature suddenly becomes more interesting when a collector knows how to identify plants and wildlife that he sees out of doors. Young collectors will also find that it costs little to collect autographs, photographs, bottles, buttons, match-box covers, herbs, minerals, art prints, and thousands of other small inexpensive objects.

Even collecting specimens of value may cost little if you know where to look and are willing to mend and repair. Many collectors who go in for antiques, curious bells, books, fine china, old clocks, fans, old glass, lamps, pewter, watches, and weapons spend only modest sums at sales and auctions because they recognize values and know bargains. They are always on the lookout for additional items once they have learned to appraise what they see and to recognize quality under a layer of dust. It is surprising what excellent collections can be assembled without much expense if one understands how to restore broken parts of an object or how to refinish surfaces. One of the joys of collecting is to be able to recognize collectors' items, discuss them, and know their worth.

## ACTIVE HOBBIES

**Outdoor activities.** Did you ever wish you were better at sports? If you

# THINGS TO COLLECT

## **Animal figures:**

Dogs  
Elephants  
Horses  
Pigs

## **Antiques**

## **Arrowheads**

## **Autographs**

## **Beads**

## **Bells**

## **Books:**

Almanacs  
Children's books  
Dime novels  
Early American  
First editions  
Hornbooks  
Miniature books  
Textbooks

## **Bottles**

## **Brass from:**

China  
India  
Russia

## **Buttons**

## **Cameos**

## **Chessmen**

## **China:**

Copper luster  
Small cups  
Pitchers  
Plates

## **Clocks**

## **Coffee spoons**

## **Coins**

## **Copybooks**

## **Curios**

## **Dolls**

## **Fans**

## **Figurines**

## **Glass:**

Cut crystal  
Early American  
Decanters  
Sandwich

## **Hats**

## **Hourglasses**

## **Icons**

## **Keys and locks**

## **Jade**

## **Lace**

## **Lamps**

## **Maps**

## **Match-box covers**

## **Medals**

## **Music:**

Sheet music  
Instruments

## **Newspapers**

## **Outdoor items:**

Butterflies  
Coral  
Crystals  
Ferns  
Fossils  
Insects  
Minerals  
Seaweeds  
Shells  
Skins  
Sponges  
Starfish  
Weeds  
Wild flowers

## **Penny banks**

## **Pewter**

## **Pictures:**

Etchings  
Picture cards  
Prints

## **Posters**

## **Pottery**

## **Recordings (pho- nograph)**

## **Rugs:**

Braided  
Hooked  
Oriental

## **Scarabs**

## **Shaving mugs**

## **Silver:**

Sheffield  
Spoons

## **Ship models**

## **Snuffboxes**

## **Steins (mugs)**

## **Stamps**

## **Stories**

## **Textiles:**

Bedspreads  
Embroideries  
Linens  
Samplers  
Tapestries

## **Tiles**

## **Toys**

## **Watches**

## **Weapons:**

Firearms  
Guns  
Indian  
Small arms  
Spears

## **Wood carvings**

## **Wrought iron:**

Hinges  
Fixtures



think you have no talent for active outdoor hobbies, consider that Aristotle advised 2000 years ago: "You must do the thing *before* you know how, in order to know how after you have done it." What he meant was that to learn to swim, for example, you must first splash about awkwardly in water; if you are not willing to splash about when you first try, you will never learn to swim.

You start an active outdoor hobby by choosing something that you would really like to learn to do. You may learn how through some friend, by experimenting by yourself, by observing experts, or by reading books and magazines on the subject. If you are an outdoor type of person, you may go in for such sports as archery, badminton, camping, golf, hiking, skating, softball, swimming, or tennis. Or you may prefer less active outdoor hobbies, such as caring for animals, gardening, landscaping, or traveling. Before you can do any of these activities well, you must go through the awkward learning period.

**Indoor performing.** You may like to perform before an audience—speaking, singing, playing an instrument, or taking part in dramatics. You will always find opportunities in a community with churches, PTA groups, Grange halls, lodges, and social clubs. You can take part in panel discussions, forums, debates, and plays. You may sing solos; join a chorus, choir, or quartette; or compose songs. You may learn to play some musical instrument and join a

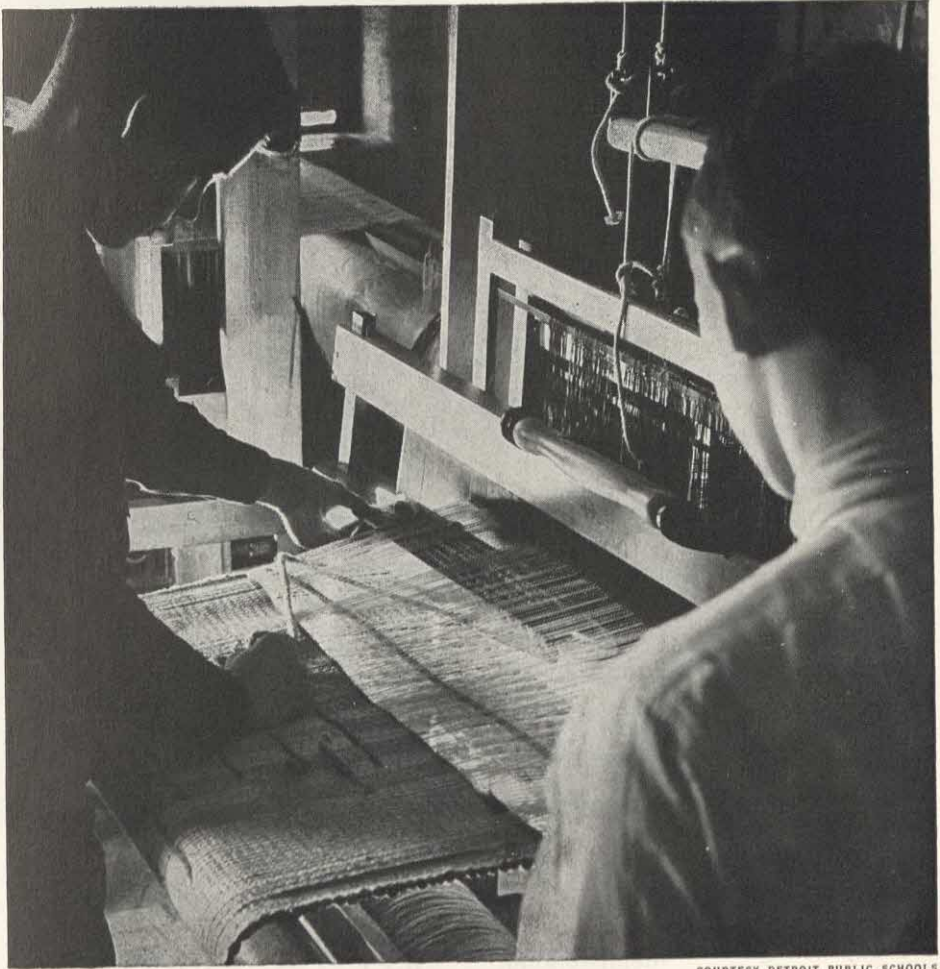
local band or orchestra. Such forms of entertainment or social activity help you to gain poise and confidence and to make friends.

### CREATIVE HOBBIES

Most of us have the urge to "make something." If you like to do things with your hands, you will probably choose a creative hobby. With a creative hobby, you use your imagination to produce something—a carving, a painting, a piece of furniture, a knitted dress, a hammered metal dish. We can all make *useful* things, and with practice we can all learn to make *beautiful* things. In this machine age hand-made products are more and more rare. Machines turn out articles that are each one identical with the others. Every hand-made article differs from every other one. Therefore, hand-made things are beautiful because they are individual and different—a quality that is easily recognized.

Your artistic ability may lead you into such activities as sketching, painting, interior decorating, designing, making stage settings, icing cakes, modeling, or making posters. One finished work leads to another until you develop both style and skill.

You probably like to use tools, as many people do, to make things and to create useful and ornamental objects. The hand tools that you need can usually be assembled a few at a time or received as gifts on birthdays and Christmases. Hobbyists usually



COURTESY DETROIT PUBLIC SCHOOLS

Weaving is a creative hobby. It may require considerable space, although some hand looms are not so large as this one. Some public schools offer a course for boys and girls in learning how to operate a hand loom. The weaving process is easy to understand: With the left hand the operator pushes the "shuttle" through the "warp" threads; the cross thread, or "woof," is wound onto the shuttle.

take good care of their tools and keep them sharp and clean in order to produce good results in their finished products. Once you have created a product, you can improve on it the second time you try because you become more skillful in using the

tools and more sure of the results.

A list of hobbies of a creative nature produced by a great variety of simple hand tools would be endless. However, as you examine many different types of hobbies, you will find that there is a hobby for everybody



## HOBBIES AND LEISURE-TIME ACTIVITIES

### **Animal care:**

Beekeeping  
Fish culture  
Pigeon raising  
Poultry raising  
Small animals

### **Art:**

Cartooning  
Clay modeling  
Clothes designing  
Drawing  
Engraving  
Etching  
Greeting cards  
Interior decorating  
Linoleum-block  
printing  
Oil painting  
Photography  
Sculpturing  
Sign painting  
Water-coloring

### **Books:**

Reading  
Language study

### **Cookery:**

Baking  
Candy making  
Canning  
Cooking

### **Dyeing:**

Batik work

### **Entertaining**

### **Games:**

Chess  
Game making  
Indoor games  
Outdoor games

### **Gardening:**

Dish gardens

### **Farming**

Flower shows  
Kitchen gardens  
Mushrooms  
Plant study

### **Laboratory work:**

Chemistry  
Electricity  
Fingerprinting  
Microscopy  
Science

### **Making things:**

Artificial flowers  
Basketry  
Beadwork  
Bird houses  
Craft work  
Handicrafts  
Leather craft  
Puzzles  
Toys

### **Mechanical work:**

Auto mechanics  
Clock repairing  
Mechanical repair-  
ing  
Watch repairing

### **Metalworking:**

Art metalwork  
Jewelry making  
Metalworking

### **Model making:**

Airplanes  
Furniture  
Papier mâché  
Ships  
Wooden work

### **Music:**

Piano  
Instrumental  
Voice

### **Needlework:**

Beadwork  
Crocheting  
Dressmaking  
Embroidering  
Knitting  
Lace making  
Lamp shades  
Needle-point  
Rug making  
Sewing

### **Outdoor sports:**

Boating  
Camping  
Fishing  
Forestry  
Hunting  
Sailing  
Scouting

### **Outdoor study:**

Astronomy  
Bird study  
Botany  
Nature study  
Rocks  
Weather

### **Personal service:**

Hairdressing

### **Physical exercise:**

Acrobatics  
Athletics  
Dancing  
Fencing  
Games  
Hiking  
Swimming

### **Printing:**

Blueprinting  
Lithographing  
Printing press

### **Scissors and paste:**

Paper construction  
Scrapbooks

### **Social:**

Church activities  
Club work  
Social work

### **Speech:**

Debating  
Dramatics  
Public speaking  
Stage

### **Stage:**

Dramatics  
Magic  
Puppets  
Stagecraft

### **Textiles:**

Bedspreads  
Costuming  
Feltwork  
Upholstering  
Weaving

### **Trades:**

Bookbinding  
Painting  
Pottery  
Radio  
Taxidermy

### **Traveling:**

Automobile driv-  
ing

### **Woodworking:**

Cabinetmaking  
Carpentry  
Carving  
Furniture making  
Picture framing  
Whittling

### **Writing:**

Journalism  
Letter writing



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY HUNTON

The hobby of making articles out of wood develops skill in the use of hand tools. These boys in a woodworking club are making furniture to be exhibited at a hobby show.

according to his interests. A few such hobbies are mentioned in the list on page 40 under classified headings. Any of these hobbies develop creative ability and hand skills that may be useful to you all of your life.

### GETTING THE MOST OUT OF A HOBBY

You get the most out of a hobby when you share your experiences with somebody else. Collectors get

together and exchange ideas. Those interested in sports find mutual interests. If you have a creative hobby, you can learn about new methods, new tools, and new materials by discussing them with others. Be sure to enlist the aid of others for advice and planning. Incidentally, sharing a hobby helps to cement a friendship.

If you collect anything, do it right. Know your specimens and the stories about them, arrange and classify them according to some plan or



# ENTRY CLASSIFICATIONS INDICATED BY LEISURE-TIME ACTIVITIES

(From Part IV of the *Dictionary of Occupational Titles*)

Hobbies	Entry Classifications					
	Professional technical, and mana- gerial work	Clerical and sales work	Service work	Agricul- tural, marine, and forestry work	Mechan- ical work	Manual work
Animal raising; poultry raising	x			x		
Artificial-flower making					x	x
Astronomy	x					
Athletics	x					x
Auto driving					x	x
Auto repairing					x	
Beekeeping				x		
Boating; canoeing; sailing				x		
Bookbinding					x	
Budgeting		x				
Camping	x			x		
Candy making			x		x	x
Canning			x		x	x
Chemistry	x				x	x
Church activities	x	x				
Clothes designing	x				x	
Club work	x	x				
Collecting (stamps, moths, etc.)	x	x			x	
Cooking; baking			x		x	x
Dancing	x					x
Debating	x	x				
Dolls	x		x		x	x
Dramatics	x					
Drawing; sketching;						
cartooning	x				x	
Dressmaking			x		x	x
Electricity	x				x	
Etching	x				x	
Farming; gardening; plant						
study	x			x		
Fingerprinting	x					
Firearms	x			x	x	x

Hobbies	Entry Classifications					
	Professional, technical, and mana- gerial work	Clerical and sales work	Service work	Agricul- tural, marine, and forestry work	Mechan- ical work	Manual work
First aid	x		x			
Forestry				x		
Furniture finishing					x	x
Hairdressing; beauty culture			x			
Hand crafts (beadwork, basketry, carving, crocheting, jewelry making, knitting, needlework, rug making)				x	x	x
Hunting; fishing				x		
Interior decorating	x				x	x
Language study	x					
Leather working					x	x
Letter writing	x	x				
Linoleum-block printing	x				x	
Literature	x					
Lithographing	x				x	x
Magic	x					
Manicuring			x			x
Masonry					x	
Mechanical drawing	x				x	x
Metalworking						
Microscopy	x					
Model making (ships, planes, etc.)	x				x	x
Modeling (clay, papier- mâché)	x				x	x
Mushroom growing				x		
Music	x					
Nature study (birds, insects)	x			x		
Oil painting	x				x	
Painting, decorative	x				x	x
Photography	x				x	

(continued on next page)



# ENTRY CLASSIFICATIONS INDICATED BY LEISURE-TIME ACTIVITIES (continued)

(From Part IV of the *Dictionary of Occupational Titles*)

Hobbies	Entry Classifications					
	Professional, technical, and managerial work	Clerical and sales work	Service work	Agricultural, marine, and forestry work	Mechanical work	Manual work
Pottery	x				x	
Printing					x	x
Public speaking	x	x				
Radio	x				x	
Rocks	x			x		
Science	x				x	x
Scrapbook		x				
Sign painting					x	
Social work	x					
Stagecraft	x				x	
Taxidermy	x				x	
Toy making					x	x
Watch repairing; clock repairing					x	
Weather	x	x				
Woodworking; cabinet-making; carpentry					x	x
Writing; journalism	x	x				

method, and learn to talk about your hobby before small, interested groups.

If your hobby has developed your hand skills, plan an exhibition of your products and be ready to tell others how you learned to do the work. Try for prizes, ribbons, and other honors at the local fair or community show. If possible, bring your hobby to school as an inspiration to others. Start a community hobby show. Explain the values that you

get from a hobby that you really like to work at.

Talk your hobby over with your school counselor, since it reveals your real interests. He will ask you about your interests when you first talk with him about your future. Application blanks for jobs often carry the question "What is your hobby?" The answer to this question gives an employer an idea of the direction of your real interests and, perhaps, some notion of your skills. He knows

that if he hires you, you will do better work if the duties are in line with your interests and if they offer you opportunities to develop new interests. He also knows that people with hobbies live well-rounded lives and are likely to be better adjusted emotionally than those who fritter away their spare time.

In the table below several types (fields) of hobbies are mentioned, together with the personal qualities which they develop. Most of these

qualities are the same as those required in different occupations. Perhaps you can add other qualities to the list. Think of some occupations that you know about and decide which of these qualities are required in them.

### LEISURE-TIME ACTIVITIES CLASSIFIED

Young people who lack work experience or who have not reached occu-

#### PERSONAL QUALITIES DEVELOPED BY HOBBIES

<i>Type of Hobby</i>	<i>Personal Qualities Developed</i>
Appreciation	Ability to identify or recognize worth; ability to appraise values; judgment
Artistic	Originality; color sense; ability in design; appreciation of others' work
Collecting	Ability in organizing and classifying; interest in detail work; ability in systematizing
Construction	Initiative; accuracy in measuring; ability to follow plans
Drama	Interpretive ability; poise; memory
Making things	Hand skills; ability to use tools; creativeness
Music	Coordination; rhythm; cooperation; interpretive ability
Raising animals	Interest in living things; concern for others; understanding environment as a life factor
Recreation	Interest in sports; ability to work with people; health and physical well-being
Social	Ability to work with people; leadership; planning ability
Speech	Good diction; fluency of speech; ability to interest an audience
Others: _____	_____
_____	_____
_____	_____



pational maturity must seek employment on some basis other than previous work or full preparation for work. Such persons are known as "entry applicants." Part IV—*Entry Occupational Classification*—of the *Dictionary of Occupational Titles* describes and classifies "fields of work" and not specific occupations.

Entry occupations are occupations to which entry applicants without experience can be referred, either (1) because the work is of a simple, routine nature, (2) because worker relationships are such that entry applicants have opportunities for on-the-job training, or (3) because established training courses exist that enable entry applicants to substitute training in lieu of experience. This last factor results in the listing of many occupations as entry which

are ordinarily considered to be non-entry.

The classification factors used in Part IV of the *Dictionary* are personal traits, leisure-time activities, casual work experience, and training courses. The leisure-time activities classified according to broad occupational fields of work are shown on pages 42–44.

Hobbies and leisure-time activities provide the interviewer with clues to possible entry classifications, not only because such activities develop skills and work habits of occupational importance but also because they provide an excellent index to the applicant's interests. Generally it is the thing a person likes to do best that he does best.

### For Discussion

1. What is the difference between (a) a hobby and a job; (b) an avocation and a vocation?
2. Why do more and more people today take up hobbies?
3. What is occupational therapy?
4. How do hobbies develop one's appreciation?
5. Describe some hobby collections that you have seen.
6. How does a person start a hobby collection?
7. Name six outdoor hobbies.
8. Describe some creative hobbies.
9. Explain how hobbies reveal a person's real interests.
10. Tell one story of a person whose hobby led to a gainful occupation.

## What to Read

- Animals for You to Make*, Philip L. Martin. J. B. Lippincott Company, Philadelphia, 1946. 85 p.
- The Bird Guide*, Chester A. Reed. Doubleday & Company, Inc., New York, 1951. 238 p.
- Book of Nature Hobbies*, T. S. Pettit. Didier Publishers, New York, 1947. 280 p.
- The Boy Mechanic*. Popular Mechanics Press, Chicago, 1945. 224 p.
- The Boy's Workshop Companion*, W. Oakley. Greenberg: Publisher, Inc., New York, 1952. 218 p.
- A Business of My Own*, Arthur E. Morgan. Community Service, Inc., Yellow Springs, Ohio, 1946. 184 p.
- Directory of Hobbies*, Charles B. Amrich. Amrich Press, Bridgeport, Conn., 1949. 79 p.
- The Elite Collection of Successful Business Plans*. Elite Publishing Corporation, New York, 1946. 200 p.
- Essentials of Pastel Painting*, Charles X. Carlson. Melior Books, New York, 1943. 48 p.
- Felt Toys*, E. Mochrie and I. P. Roseaman. Manual Arts Press, Peoria, Ill., 1943. 44 p.
- Fun with Plastics*, Joseph Leeming. J. B. Lippincott Company, Philadelphia, 1946. 79 p.
- Fun with Puzzles*, Joseph Leeming. J. B. Lippincott Company, Philadelphia, 1946. 128 p.
- Here's Your Hobby*, Harry Zarchy. Alfred A. Knopf, Inc., New York, 1950. 233 p.
- Hobby-House Ideas*, Celia M. Wright. The author, Sulphur Springs, Texas, 1950. 242 p.
- Hobby Publications*. An annotated list of bulletins issued by various government departments and agencies. U.S. Government Printing Office, Washington 25, D.C., 1954. 24 p. (Free)
- It's Fun to Make It Yourself*, Stacey Maney. Journal of Living Publishing Corporation, New York, 1944. 384 p.
- Minerals*, Herbert S. Zim and E. K. Cooper. Harcourt Brace and Company, Inc., New York, 1943. 368 p.
- Money from Ideas*, M. Penn Laughlin. Popular Mechanics Press, Chicago, 1949. 142 p.
- Money-making Hobbies*, Joseph Leeming. J. B. Lippincott Company, Philadelphia, 1948. 194 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern hobbies.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Design and make greeting cards and place cards as a hobby.
<b>BUSINESS:</b>	Start keeping a careful budget of all the money you receive and spend.
<b>ENGLISH:</b>	Learn to conduct a meeting using parliamentary rules of order.
<b>HEALTH:</b>	Tell about sports (hobbies) that have occupational possibilities.
<b>HOME ECONOMICS:</b>	Make a collection of recipes suitable for refreshments at a Canasta party.
<b>LANGUAGES:</b>	Collect interesting stories of the derivation of English words from other languages.
<b>MATHEMATICS:</b>	Make a collection of number puzzles that are "brain teasers."
<b>MUSIC:</b>	Collect related symphony recordings and organize a concert for a small group of friends.
<b>OCCUPATIONS:</b>	Canvass your class to find out the most popular hobbies of the group.
<b>SCIENCE:</b>	Describe some science hobbies for which high school boys and girls compete for prizes every year.
<b>SHOPWORK:</b>	Compare hobbies that require the use of machine tools and those that require hand tools for completion.
<b>SOCIAL STUDIES:</b>	Describe a hobby that a blind person could take up. Tell about someone in history who developed his hobby into an occupation.

*Money-making Hobbies.* Popular Mechanics Press, Chicago, 1949.  
158 p.

*101 Things for Girls to Do,* L. B. and A. C. Horth. J. B. Lippincott Company, Philadelphia, 1954. 180 p.

*Parties A to Z.* National Recreation Association, Inc., New York, 1944.  
96 p.

*Sewing Magic,* Mary Brooks Picken. McGraw-Hill Book Company, Inc., New York, 1952. 262 p.

*Soap Carving,* Lester Gaba. Studio Publications, Inc., New York, 1944.  
80 p.

*Treasury of Hobbies and Crafts,* Michael Estrin, editor. Knickerbocker Press, New York, 1946. 160 p.

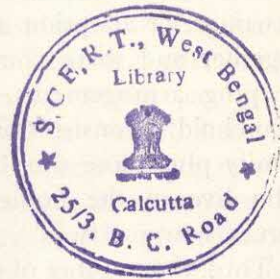
*What Makes It Tick?* Katharine Britton. Houghton Mifflin Company, Boston, 1943. 232 p.

*What to Make.* Popular Mechanics Press, Chicago, 1948. 236 p.

*You Can Make It—Things to Do with Scissors and Paste,* Louis V. Newkirk. Silver Burdett Company, New York, 1944. 214 p.

*You Can Whittle and Carve,* Amanda W. Hellum and F. H. Gottshall. The Bruce Publishing Company, Milwaukee, 1944. 82 p.

*The Young Craftsman.* Popular Mechanics Press, Chicago, 1943. 224 p.





## CHAPTER 4 EVERYONE'S OCCUPATION—

### HOMEMAKING

You are a member of a family, and every family has its homemaker. In a sense we are all homemakers because we all contribute to family living regardless of how we earn a living. The term "family" should need little description, but in the U. S. Census reports the term is used in a very special way. A "private family," according to the Census, consists of a "family head" and all other persons in the home who are related to the head by blood, marriage, or adoption and who live together and share common house-keeping arrangements. A "private household" consists of a private family plus those unrelated persons who live in the home as lodgers, servants, or guests.

Thus, the number of private families and the number of private households is identical. Institutions, hotels, and large rooming-houses are not included in either group.

The term "head of the family" does not necessarily mean a man. Today there are nearly 7 million women who are heads of families. Of

these women, 1 million are single, more than 4 million are widowed and divorced, and 1 million are separated from their husbands. Two-and-a-half million women are heads of one-person families.

In the 1950 Census there were 39 million families, each with a homemaker. It is estimated that the number will increase to 45 million by 1960. This means that many more women will become homemakers.

**Homemaking cooperation.** Homemaking is a cooperative venture for the most part. A man chooses a wife, and together they enter a partnership. The man's job is that of breadwinner who earns the money to support the family. He works most of the day, and consequently he must limit his help with the homemaking activities at home to evenings and spare time. Sometimes he doesn't earn enough to take care of the expenses of the family. If his wife also works to supplement the family income, she must hire others to do the work of the home or she must do it herself, with the help of other family



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

"Homemaking" is not given among the occupations listed in the Census because it is not a "gainful" occupation, in the sense of working for money. But every family must have a homemaker who knows how to manage meals and clothing and maintain the health and well-being of all the family members.

members, during her spare time. In a recent year it was estimated that there are a million and a quarter working mothers in families where there are children under 6 years of age.

The woman of the house—the homemaker—manages the household and enlists the aid of the rest of the family to get the work done. In the best-regulated homes today every boy and girl in the family has some homemaking responsibility in or around the home.

**What is homemaking?** You will not find homemaking among the occupations listed in the Census, nor will you find it defined in the *Dictionary*

*of Occupational Titles*. The reason is that homemaking is not considered a "gainful" occupation—that is, an occupation that is a part of the labor market for which pay is received in money. Nevertheless, although homemakers do not receive a salary or wages, their work saves family money and is often harder and requires longer hours than "gainful" occupations.

Homemaking is a human-interest occupation that helps to bind the members of a family together and to set the high standard of living that families in this country enjoy. Homemaking is mainly a woman's job—the work of wife and mother,



especially in the American home—and perhaps the most important field of work to which a girl can aspire.

The man of the house also has his part to play in homemaking. He must understand the duties of the homemaker and help in running the home. To him fall the heavy tasks—use of tools, simple repair work, upkeep of labor-saving machines, washing windows, and other jobs around the home. Today men are also taking a more active part in the home-making tasks that pertain to the rearing and nurturing of the children in the family.

The homemaker should not be confused with the professional home economist—dietitian, home economics teacher, home demonstration agent, foods editor, etc. Homemaking is a part of home economics, but training for it is directed toward the home where the work is not paid for, rather than toward the business and professional world where work is done for a salary.

A good homemaker must have ability, training, and education, like any other worker. Courses of study now available in most high schools include such subjects as marriage and family life, child care, health, home management, foods and nutrition, clothing, consumer buying, and home furnishings.

#### **Number and status of homemakers.**

There are 59 million women 14 years of age and over in the United States (U. S. Census, 1954). Of these, 57

percent are full-time homemakers, i. e., keeping house; another 9 percent are not in the labor market; 32 percent are gainfully employed in the labor market; and 2 percent are looking for work. This indicates that many more women are engaged in full-time homemaking than in any other occupation. Half of the women who work are married and, therefore, also homemakers.

In addition, probably the majority of the women employed are also part-time homemakers. That is, they have the double duty of working on a job and making a home, either for themselves alone or for themselves and others.

The greatest number of employed women are between the ages of 20 and 24. After the age of 24 years, however, the number of employed women decreases rapidly because many women marry at this age and stop working. Nevertheless, a good proportion of married women, and a greater proportion of women widowed and divorced, are employed in full-time jobs.

Of the 59 million women 14 years of age and over in the United States, probably two-thirds are married, one-fourth have never been married, and the remainder are widowed or divorced. Most of these women are homemakers, and many of them are in and out of employment throughout their lifetime, depending upon their financial needs, the special talents that they may possess, or the needs in industry at the time.



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY HUNTON

Homemakers do not all follow the same schedule in their work. Each manages her home according to her own needs. For instance, if a woman wants to make slipcovers, she must arrange her schedule to allow time for this activity.

**The homemaker's duties.** No two homemakers follow the same pattern in their work. Each manages her home according to her own ideas, but each has a mental list of duties that are necessary to be performed. If you follow your mother about the house for a day or two and make a list of her duties, you will see that tasks fall under every one of the various occupational classifications. Examples of her duties within the different major occupational groups listed on page 55 are apparent, and the list may be extended indefinitely.

A generation or two ago homemakers were limited to their domestic duties because so many hours were required for washing clothes, ironing, sewing, baking, cooking, and cleaning. Today every woman should know how to do these things, yet she is also expected to have other accomplishments. She does not work as hard at such domestic duties because laundries, factories, and bakers take care of many basic needs, and labor-saving devices in the home do work in a short time. She therefore has more time for social and commu-





COURTESY "LADIES HOME JOURNAL," PHOTO BY EDWARD BURKS

Designing and making a dancing costume for her daughter is just another activity in the life of a homemaker. Being able to sew is an important skill for any homemaker to have.

nity activities both in and out of the home. Modern women, with fewer servants and fewer relatives to help, are spending more time on nutritional needs of the family, proper clothing, child study, and home management in general.

**Economic importance of the homemaker.** It is said that the homemaker spends, or causes to be spent, nine-tenths of the family income. Often she keeps the family budget and plans spending and saving on a systematic basis. She has ideas about the kind of a house she wants to live in, about the kind of car the family should drive, and about the electrical appliances needed in the home. She determines the purchase of clothing and textiles, household utensils, and food for the table. She decides on the style of furniture for the home, the interior decorations, and the musical

instruments. Often she purchases at least a part of the husband's clothing.

The combined purchasing power of all homemakers amounts to big business. Manufacturers and retailers are aware of the woman's purchasing power, either directly or indirectly. When companies advertise over television, on the radio, or in newspapers and magazines, they appeal to the woman of the house and to the children who are urged to "ask your mother." Can you give some examples of such advertising?

The homemaker who is the best judge of values is, therefore, able to make the best trades. To be a good judge of values means study and experience with all goods that go into a home. What is the most durable? What is most serviceable? What product is the best buy by weight or

### OCCUPATIONAL DUTIES OF THE HOMEMAKER

<i>Occupational Group</i>	<i>Occupation (Homemaker's Duty)</i>
Professional	Teacher
Semiprofessional	Interior decorator
Managerial	Purchasing agent
Farming	Gardener
Clerical	Budget maker
Sales	Shopper
Craftsman	Dressmaker
Operative	Laundress
Domestic service	Family cook
Personal service	Practical nurse
Protective service	Watchman
Building service	House cleaner
Farm laborer	Unpaid family worker
Laborer	Odd job worker



volume? What style is in best taste? How does one product compare with another in quality and price? Can I afford this and still keep within my budget?

If we were able to assign values to the jobs listed in the table on page 55, we might get a clearer idea of the homemaker's economic importance. Such values would vary, however, with each individual homemaker as to the amount and quality of her work. Nevertheless, it is clear that the more talented she is, the more she can save on the family budget. Most homemakers save by doing all their own work without any maid service. Others save by shopping around for especially good values, doing interior painting, dress-making, and planning and adapting many of their skills to household tasks.

**Security of the homemaker.** The urge to work in the business and professional world may not be so great for a girl as it is for a boy. Every able-bodied man *must* work if he has any self-respect. A woman may or may not work for a living during her lifetime, depending upon her financial needs, her ambition, or her desires.

To be on the safe side, however, *every girl*, whether she expects to marry or not, should prepare for some work or skill in which she has both interest and aptitude. Even though a girl may expect to become a housewife and manage her own home on her husband's income alone, her security will be much

greater if she knows that she is employable. This means that she must not only prepare for homemaking, but also for gainful employment of some kind. If she is qualified for some particular kind of work, she can gain experience on a job before marriage, as is done by many girls 20 to 24 years of age.

After marriage, if it becomes necessary for her to work for a living, she will have a skill that she can use to bring in an income. Even in later life, when her children are on their own, she can revive this skill, if she desires, and become employable. Or it may be possible for her to make use of her skills at the same time that she is giving her chief attention to the home or family. Parents and educators agree that the modern girl should learn to do some useful work in which she can find employment in case of need or desire. By preparing for an occupation, she may accept opportunities that arise before marriage, and she will have some security after marriage if it becomes necessary for some reason to earn a living. If she is untrained and unskilled in any kind of work, she is likely to have little opportunity for paid employment and less security.

**If the homemaker works.** A woman may work after marriage for one of four reasons: (1) She may be obliged to supplement the family income to pay expenses. (2) She may want her children to have a better education than her husband's income alone can provide. (3) She may be unwilling to



COURTESY CORNELL UNIVERSITY

Home economics courses in college prepare girls for family life, for teaching, or for jobs in business. These college girls are three of the six "mothers" in charge of five-month-old Johnnie.

give up some luxury or type of living to which she was accustomed before marriage. (4) She may be trained to offer some valuable service to industry or society or have a profession for which she has prepared herself and in which she wishes to stay.

Unless working wives are paid a fairly substantial salary, they are sometimes not much better off working than staying home and caring for the family. The reason for this is that they must pay for many additional items—meals out, carfare, more and better clothes, maid service in the home, etc.—that are not so necessary for the homemaker who spends all of her time in the home.

When a woman continues to work after marriage, there is a danger in the couple's becoming adjusted to a double salary. If this happens, it may be impossible for the woman to leave her job without too much sacrifice. If a couple can possibly do so, it is wise for them to put aside and save the wife's salary and live on the husband's earnings. In this way they become accustomed to living on a single salary and have a nest egg in the bank to apply to a home, for having children, or for investment.

**Preparation for homemaking.** Too often a girl approaches marriage with a notion that no special preparation is needed for the job of homemaker.



Because homemaking is not considered a career or listed among the occupations in the Census, she may feel that Mother's teaching is all that is necessary to become a housewife. But each generation is a little more advanced than the last, and housekeeping today is quite different from housekeeping when Mother was a girl. A few girls may feel that housework is drudgery, but fortunately most modern women are proud to manage a home and rear a family.

Homemaking education in the United States is available to young people in elementary and secondary schools, to out-of-school youth and adults, and to college students. In the elementary school, homemaking is included in the health program to develop better health habits, as a part of arithmetic where marketing problems are solved, and in geography where the habits and customs of families of different countries are studied. Homemaking is not generally taught as a special subject until the seventh or eighth grades, although in some elementary schools

foods, nutrition, family life, and clothing are taught in lower grades.

In most secondary schools, homemaking education is offered in the ninth and tenth grades—principally to girls, but often to boys also. More advanced and specialized courses are available to both boys and girls who wish to elect them in the eleventh and twelfth grades. Homemaking education is offered in approximately two-thirds of the public secondary schools in the United States. Probably 65 percent of all girls who are graduated from senior high school have had some work in homemaking education.

The objectives of homemaking study are to help the individual to live a more useful and satisfying personal, family, and community life—that is, to become a better citizen.

The content of a course in homemaking education covers such subjects as those listed below.

Colleges and universities offer home economics courses for two purposes: (1) to prepare students for their roles as family members and

#### **SUBJECTS TAUGHT IN HIGH SCHOOL HOME ECONOMICS COURSES**

- Selection, preparation, serving, conservation, and storage of food for the family
- Selection, care, renovation, and construction of clothing
- Care and guidance of children
- Selection and care of the home and of its furnishings
- Selection, use, and conservation of home equipment
- Maintenance of health; home care of the sick, including first aid
- Management of human resources and of materials available to the home
- Maintenance of satisfactory family relationships
- Education for marriage
- Consumer education



COURTESY U. S. CHILDREN'S BUREAU

Learning about children and family life is a prerequisite for modern parents—both mothers and fathers.

homemakers and (2) to prepare students for teaching and for entrance into any other occupations and professions for which home economics training is required.

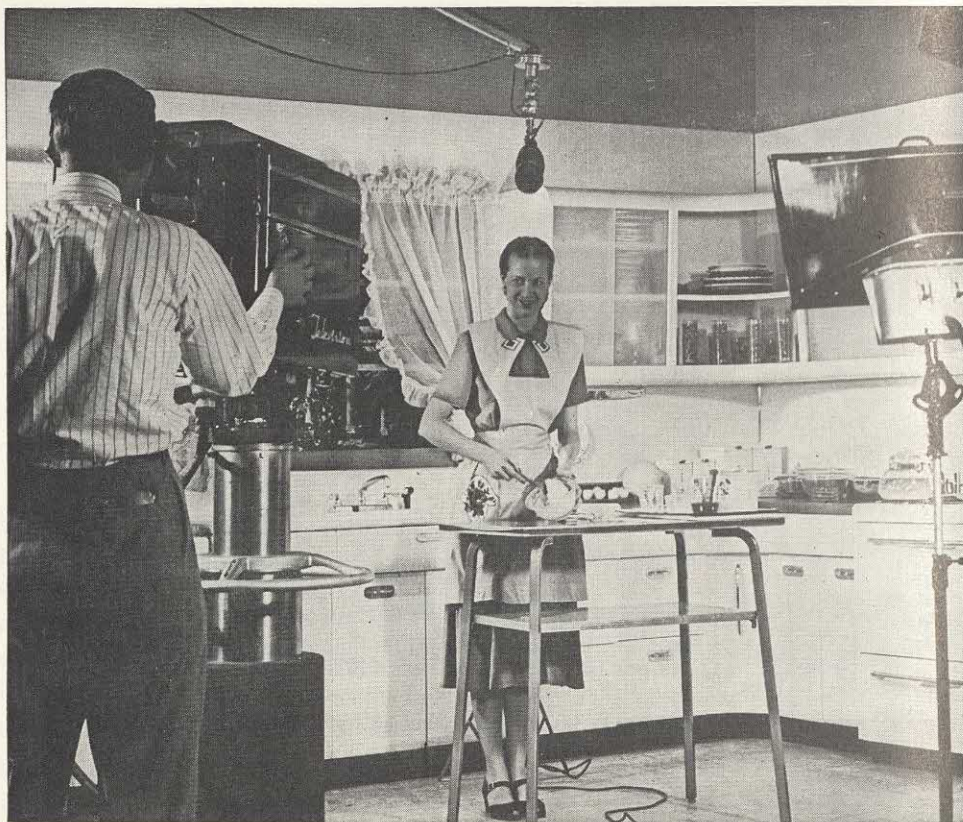
**Future Homemakers of America (FHA).** FHA stands for Future Homemakers of America—an incorporated, nonprofit youth organization. Any pupil enrolled in a secondary school who is taking or has taken a homemaking course in junior or senior high school may become a member. Membership is voluntary. The FHA is sponsored by the Home Economics Education Service of the U. S. Office of Education and the American Home Economics Associa-

tion. A national headquarters is maintained at the U. S. Office of Education, Washington 25, D. C.

FHA chapters emphasize worthy home membership, encourage democracy in home and community, work for a good home and family life for all, promote international good will, develop leadership, and provide individual and group recreation.

There is a National Executive Council, and chartered state FHA associations are made up of local chapters in junior and senior high schools that offer homemaking courses, or home economics. In 1954 there were 8887 affiliated chapters of FHA with





COURTESY HOME ECONOMICS IN BUSINESS—CHICAGO GROUP

Many home economists, hired by business concerns as advisers, demonstrators, or consultants, demonstrate on television. Such women are professional workers who have had college training in home economics, in addition to homemaking courses in high school.

more than 389,000 voluntary members. The chapter adviser is a homemaking teacher in the local school, and student officers of each chapter are elected annually. How to organize a chapter and carry on its activi-

ties is explained in a 45-page bulletin entitled *Adviser's Handbook*. The FHA also publishes a national magazine called *Teen Times*, issued five times per year, at \$1.00 for the five issues.

#### For Discussion

1. Explain the difference between a private family and a private household.
2. What is meant by "family cooperation"?

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern homemaking.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Design a new window treatment for your room at home.
<b>BUSINESS:</b>	Discuss the personal advantages to a homemaker of being able to use the typewriter.
<b>ENGLISH:</b>	What reference books would you select for a good home library?
<b>HEALTH:</b>	Report on nutrition as a factor in family health.
<b>HOME ECONOMICS:</b>	What are the most important duties and requirements of a homemaker?
<b>LANGUAGES:</b>	Discuss the use of language recordings in learning a foreign language at home.
<b>MATHEMATICS:</b>	Make a budget for a family whose income is \$3000 a year.
<b>MUSIC:</b>	Discuss several different ways in which a homemaker might provide music in the home.
<b>OCCUPATIONS:</b>	How might a homemaker earn extra money without having to leaving home?
<b>SCIENCE:</b>	Why is it helpful for a homemaker to know household chemistry and household physics?
<b>SHOPWORK:</b>	What types of shopwork are most useful to women who are homemakers?
<b>SOCIAL STUDIES:</b>	Discuss how the high cost of housing is affecting young married couples.



3. In general, what is the difference between preparing for homemaking and preparing for home economics?
4. To what extent are men, as well as women, homemakers?
5. What are the responsibilities of a homemaker?
6. Explain how it is that homemakers spend nine-tenths of the family budget.
7. What security may a new homemaker expect?
8. Under what conditions should a homemaker enter the labor market—that is, seek paid employment?
9. How does a person prepare for homemaking?
10. What is the FHA?

#### What to Read

- American Home Economics Association Career Bulletins. American Home Economics Association, Washington, D.C.
- Career Opportunities in Home Economics in Business.* Home Economics in Business Department of the American Home Economics Association, Washington, D. C., 1954.
- Creative Careers in Home Economics*, Hazel T. Craig. Practical Home Economics, 468 Fourth Ave., New York, 1947. 32 p.
- Home Economics.* High School Career Series No. 2. Ladies' Home Journal, Philadelphia, 1948, 6 p.
- Opportunities in Home Economics*, Charlotte Biester. The National Press, Millbrae, Calif., 1948. 50 p.

## CHAPTER 5 OCCUPATIONS IN YOUR COMMUNITY

Let's take a walk down Main Street in your town late on a winter afternoon when the lights from the store and office windows shine with a warm glow and allow us to peer in at the workers. Our one purpose in this activity is to observe how some people are earning a living.

**Workers you may observe.** As we stroll past the big shop windows, we can see people at work. The barber is using electric clippers to trim a man's hair. The grocer has just weighed some vegetables and is putting them in a bag for a woman to carry home. A shoe repairman, sitting at his bench, is using a hammer to fix a rubber heel to a man's shoe. Farther on, a beauty operator can be seen adjusting a hair-drying machine over a girl's head. In a dime store a salesgirl is making change for a customer's purchase, and a clerk at the soda counter is placing a steaming cup of coffee on the counter for a tired shopper. A pharmacist is wrapping a small white package neatly for a purchaser, and we are held up temporarily while a truck driver delivers a large carton to the drug store. In a real-estate office a man is apparently

fixing a seal to some papers for a client.

At any time during a working day you may observe these and hundreds of other workers on the job. You may observe many things about them—their duties, their age, their personal appearance, dress, and physical fitness. However, you must learn more about the preparation and requirements of their jobs before you will find any real interest in any of them or understand what is required of the persons who hold them. Every worker must qualify in some way as to age, health, size, education, and experience. Some must take licensing examinations before they are allowed to work at their trade or profession.

**Workers you seldom see.** You may notice squares of yellow and blue light from distant factory and office windows outlining buildings against the dark sky. You cannot see in these windows, and so you cannot observe the people at work. There are thousands of persons that you seldom or never see at work on the job. Hidden behind factory walls, in tall buildings, or within fenced-in areas, men and women—unseen, unsung, and unknown to the passer-by—work at





HAROLD M. LAMBERT FROM FREDERIC LEWIS

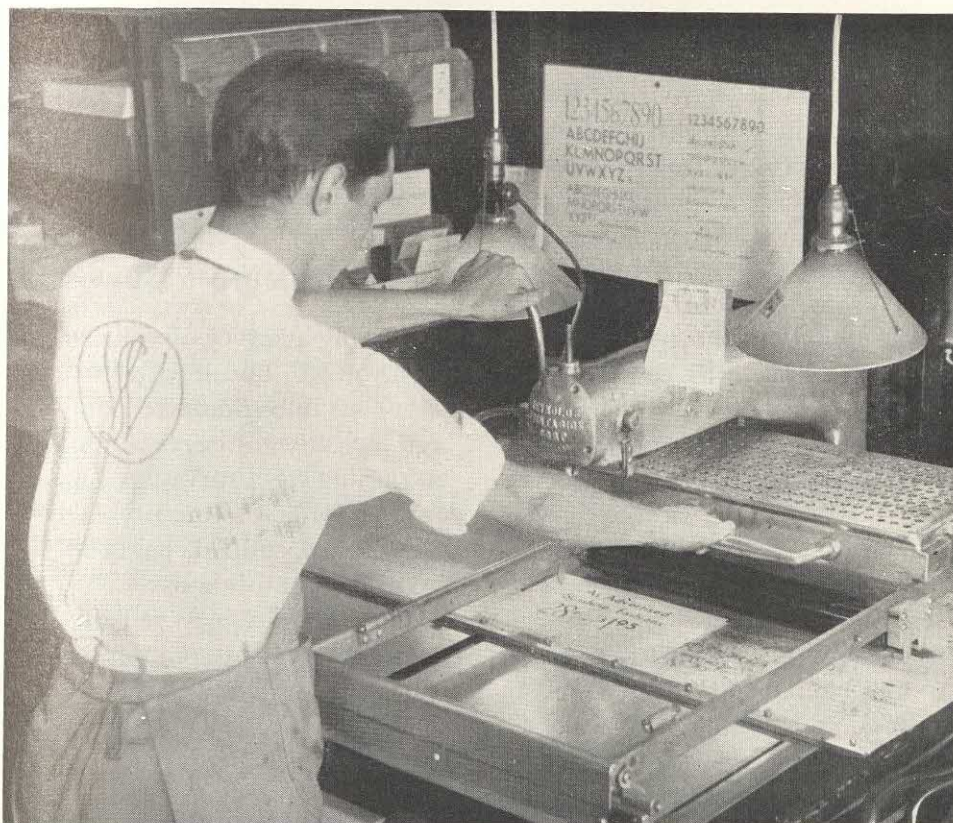
In any neighborhood the most familiar store is the one where the family buys food for the table. Outside of school hours many boys find work as helpers or stock boys, and girls may act as checkers in local stores. Some students in "work-experience programs" work half time in a store for school credit and attend school half time.

tasks indispensable to society. Men work in mines deep in the earth, on ships at sea, in tropical climates and frigid zones, in forests and on plains. We might pass the entrance to a mine but never know what goes on below because visitors are not allowed in the mines on account of the many hazards.

Sooner or later some of you may blindly seek a job at some factory doing whatever work you can get just to get on the pay roll. You may be given a simple test to determine whether you are able to do a certain kind of work. It is a fairly simple matter to test a person for a particu-

lar job that requires quick fingers or a good memory. It is impossible, however, to give a person a test that will indicate any ONE specific job out of 22,000 that he is best fitted to do.

To avoid taking a job blindly, therefore, it is well to make a study of a few jobs close at hand—of the local opportunities available. If you are a thoughtful student, you will find out long before leaving school what occupations—seen and unseen—your town has to offer; how you can fit into a definite local job; how you can prepare for a local job while in high school; and what jobs are be-



COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

Stores in all communities need many signs for their display of goods. At one time such signs were hand painted. Today large stores employ a **machine sign writer (1-25)**, a clerical worker, to print such posters on a sign-printing machine.

ing filled every day in your community.

**Why leave home?** Your own community offers inviting first jobs in many fields of work that allow you to live at home. Census reports indicate that four out of five persons remain in their own community to earn a living. You probably know many people who are lifetime residents of your town. One out of five residents, however, will leave home to work in another place. Many of

these persons are professional men and women in highly specialized fields of work who must earn their living away from home as conditions demand—engineers, doctors, pilots, and others. For example, a boy living in an agricultural community who studies to be a mining engineer must be prepared to leave his community and go to mining areas for employment.

Since your first job will probably be in the region of your own com-



munity, your study of occupations should begin with local jobs. Occupations available in your own community and in your own state represent a good cross section of ordinary work everywhere at which many persons earn a good living.

There are many ways to find out what people in your region do to earn a living and how they live. In this chapter we will consider only two ways, both of which make good group or class projects for the study of occupations: (1) what your community is like (a community survey) and (2) what occupations are available in your community (an occupational survey).

A community survey will help you to understand your town from an economic standpoint. This study enables you to become acquainted with the history and geography of your region. From the time of the first settlement up to the present, your community has survived and progressed because of the development of its natural resources, its trade, its agriculture, its industry, or its location. You may find that your community holds opportunities to be developed in the future when you are ready to seek regular employment.

An occupational survey of your community will disclose the different occupations at which the residents make a living and the kinds of beginning jobs that are available for you to enter. By making a systematic effort to observe, visit, and talk with local workers and employers about

many occupations, you will gain a better knowledge of what work and industry your community supports. You will understand better how you may fit into some work in which you are interested.

### A COMMUNITY SURVEY

In making a survey of your community, you will find it easier to divide your class into committees and to assign each committee certain topics of an outline for a survey. A suggested outline for a community survey is given in Appendix A, pages 564-566, in the back of this book.

Some of you may remain in or near your present community all of your lives and find satisfactory job opportunities. Some of you may leave to go where pastures seem greener, while new people from other towns may move into your locality because it seems to have greener pastures for jobs than the places they left. A community survey will help you to decide what encouragement your town holds for you.

In your survey you may find that the chief industry in your state is agriculture. Or it might be fishing, lumbering, manufacturing, mining, or two or three of these. For example, compare the industries and products of Maine and Texas.

Maine is heavily wooded, with many rivers, lakes, and islands. As a resort area, the state takes in a considerable income from summer visitors. It leads the nation in the pro-

duction of potatoes and specializes in lumber products, such as pulp and paper. The principal industries are fishing—especially lobster fishing, shipbuilding, textiles, tanning, oil-cloth, boots and shoes, canning, and machinery. Occupations in Maine, therefore, are likely to be in these large industries.

Texas has more than 600 airports. It is the leading cotton-growing state, cotton representing more than half of the total crop-value of the state. It leads in petroleum production and ranks first in beef cattle, sheep, and mules. It is the largest rose-growing center in the world, and it produces large quantities of peanuts, citrus fruits, corn, wheat, oats, rice, tomatoes, pecans, onions, cantaloups, dates, figs, and strawberries.

Obviously job opportunities are broader in Texas than in Maine. However, residents of Maine are not likely to understand Texas opportunities any more than Texans would understand jobs in Maine. It would be as unwise for a Maine boy to prepare for cotton farming as for a Texas boy to study eastern lumbering. On the other hand, some jobs are characteristic of both localities.

Cities and small towns in Maine and Texas will reflect in a large measure the industries of their respective states. In some states metropolitan cities provide as many industries as their states. New York City, for example, is the home of such major industries as shipbuilding and repair, aircraft and parts, scientific

instruments, electrical machinery, women's and men's clothing and accessories, printing and publishing, food products, wholesale and retail trade, service industries (hotels, amusements, and recreation), advertising and publicity, finance, insurance and real estate, transportation, communication, and utilities.

You probably already know which are the major industries of your own state and community. From a community survey you will learn about many other activities and how the development of industries in your region affects the growth of your town and state.

To begin such a study, look into the origin and history of your community. The first settlers chose the location with a purpose. Find out what trade routes were developed by water or rail and what industries or other activities were first established. Why did other industries locate in your community?

The location and climate of your community had much to do with its development. Communities located on large bodies of water carry on shipping. In mountainous districts, mining may be a major industry. On the plains, where the soil is rich, some communities produce large quantities of food products.

Some cities can expand in area, and others are confined by natural or legal barriers. For example, New York, our largest city in population, occupies 365 square miles. Los Angeles, with the greatest area of any city





COURTESY LIBRARY OF CONGRESS

In a timber region, an occupational survey will include woodmen. These woodmen in Maine are feeding logs through a sluiceway to be ground into pulp for making paper.

in the world, has expanded to 452 square miles. San Francisco, on the other hand, occupies 93 square miles at the end of a peninsula which limits further expansion.

For survey purposes, a map of your community should be purchased or drawn by hand. The Geological Survey, Washington 25, D. C., publishes maps showing your community and the region around it. These inexpensive sectional maps contain a great deal of useful and unusual information about the region in which you live.

The people who settled your community probably brought with them certain cultures, religions, and skills which helped to develop your region.

Perhaps some of these assets resulted in institutions and in work and industry that have endured to the present day. The growth in population in your community is one sign of prosperity. Find out how many persons and families live in the community according to the last Census. You can find the answer in the publications of the U. S. Census Bureau and often in the *World Almanac* or in the *Information Please Almanac*.

Your community may produce special products, raw materials for manufacture, or electric power. Investigate the industrial development and the number of wage earners.

The labor situation in your community is an indication of its degree



COURTESY "BUSINESS WEEK," PHOTO BY AL. BETTINGER

The small-town newspaper may be managed by one person, who writes, edits, and reads proof of all articles. Such an editor would be very much interested in an occupational survey of the community made by high school students.



of industrial progress. Is the labor supply adequate? What labor unions are well organized?

Are most of the residents in your community employed? What percentage are not? Of these, how many are homemakers, how many are school children, and how many are out of work?

Compare the living costs in your community with those of other communities. Find out the number of wholesale stores and retail stores, the kinds of goods usually purchased in town or away from town, the number and kinds of hotels, the places of amusement, and the transportation facilities.

Know the principal banks, the educational institutions, the newspapers, the radio or television stations, and the professional services that your community offers.

Find out about your town or city form of government and what civic, social, and related groups serve the public.

Visit the Chamber of Commerce or Better Business Bureau and ask about the prospects for new workers. Incidentally, obtain any available descriptive literature from these agencies.

In general, show the characteristics of your town that make it a desirable place in which to live and work.

### AN OCCUPATIONAL SURVEY

A thorough occupational survey of your community would reveal the

work characteristics of your area, the nature of local work opportunities, the number of workers in different occupations, and something about the conditions of work and wages paid. Such data about jobs are difficult to collect accurately, and even trained interviewers make errors in classifying and interpreting jobs correctly. A thorough survey of the occupations in your community, therefore, would take too much time as a class project and would be too costly.

However, with the help of your teacher, your class can make a partial survey that will reveal information about local jobs and will cost little or nothing to make. The findings will provide a wealth of instructional material, useful for class discussion and helpful to you in knowing about the kinds of work in your locality.

An occupational survey must be planned simply. The aim is to collect only the information which you, as a student, will understand. This may include facts about types of businesses, numbers of workers, conditions of work, union requirements, preparation for jobs, and opportunities for beginners. In some cases an occupational survey in a small community will be merely an enumeration of the occupations of residents without many facts relating to age, training, or experience.

**A simple survey.** A ninth-grade class in a small midwestern community made a brief but interesting occupational survey in this manner: Each pupil was given a letter of the

alphabet and told to find as many local jobs as possible beginning with that letter. By using the telephone and street directories, observing and questioning workers and employers, each pupil prepared a sizable list of local occupations. In the classroom these lists were consolidated into one alphabetical list of occupations available locally. The findings created excellent discussion topics, not only for the class, but outside of school among parents and employers in the town.

**A practical survey.** Another class in a small eastern high school undertook an occupational survey to learn about local occupations in their town with the purpose of discussing job opportunities in the classroom. After dividing the class into committees, each student was given an area near his home for investigation. The students then interviewed many persons—the postmaster, clergymen, doctors, insurance agents, garage men, storekeepers—to obtain the necessary facts. The members of the class obtained information and brought back data on the occupations of 583 families in the community. For each person who lived and worked in the community, a card was made out with a code number of the student who obtained the information. In this manner the data could be checked. The cards were then filed according to major occupational groups and used later to prepare maps and posters illustrating facts that had been discovered about occupations.

**Detailed surveys.** The general purpose of an occupational survey is to collect information about jobs in a given area at a definite time. Occupational patterns change in any community because of business conditions, wars, depressions, emergencies, or other factors. Therefore reliable data obtained today may soon become out of date. Nevertheless, these data help to show trends and furnish a basis for comparison when new surveys are made. For example, each time the U. S. Census reports on occupations the latest figures are compared with previous data to show gains, losses, and other trends.

As a class project the purpose of the occupational survey is to provide local vocational information for use of the members of the class and any other students or outsiders who may be interested. Every member of the occupations class should take part in gathering facts, analyzing them, and weaving them into a study of local job opportunities. Preparations for and results of a local occupational survey make good news items for the newspaper. Occupational information gathered about real people in your community provides a human interest not found in books.

**Planning an occupational survey.** In a small town it is often possible to cover most of the occupations at which citizens earn a living. In a large city do not expect to make more than a partial survey as a class project. For example, investigate only one industry, a few occupations





COURTESY BURROUGHS ADDING MACHINE CO.

Even the smallest towns have banks where townspeople may carry on their banking transactions. Any occupational survey should reveal the kinds of jobs available in the bank of the community.

that you would like information about, or all of the occupations in a single city block. No single pattern of procedure can be suggested because communities vary widely in area, population, geography, transportation facilities, manufacturing output, agricultural products, and in specialized work. In any event, before launching an occupational survey consider the following factors:

1. Purpose of the survey
2. Extent of the survey—what occupations or industries can be surveyed
3. Time and funds needed
4. Method of obtaining the necessary information—interviews or questionnaires

##### 5. How to make use of the survey data

Under the leadership of your teacher, you will be able to prepare an outline that will be adjusted to the time available for making an occupational survey.

**Making preparations.** Once you decide on an over-all plan, the class should be divided into several committees, each responsible for a section of the survey. Every student in the class should be on at least one committee so as to have an actual part in the survey.

The committees then make preparations for securing the kind of data that will be most useful. This means finding out about local occupations

from such sources as libraries, government agencies, industries, chambers of commerce, boards of trade, employment agencies, local colleges and universities, and local organizations of employers and employees. These sources will supply much local occupational information from job listings, local studies or surveys, occupational statistics, job placements, new opportunities, and other facts.

For example, the classified index in your local telephone directory is a mine of information about local opportunities. Every business and industry of any importance has a telephone. Count the headings that show the industries and occupations in your area. Take special note of par-

ticular trades and industries under which many subscribers are listed. Such a count gives only a general view of local opportunities, but it suggests certain areas or fields of work that a class may desire to study in detail. In one city of 50,000 population such a count showed 7 or more subscribers in the major occupational fields listed below.

After such a study of directories, use 3 by 5 cards to record each factory, plant, store, office, home, or other place to be visited in the survey. Assemble these cards and distribute them to the members of the committees who will obtain the occupational data.

Your teacher will help you with questions to ask employers and oth-

### OCCUPATIONS AND INDUSTRIES IN A SMALL MIDWESTERN CITY

[Note: In each of these occupational fields seven or more subscribers were listed in the classified index of the telephone directory. Numbers in parentheses show those with 25 or more subscribers.]

Bakeries	Florists	Paint dealers
Battery services	Fraternal organizations	Photographers
Beauty shops (50)	Funeral directors	Physicians (72)
Building-material dealers	Furniture dealers (27)	Plumbers
Cigar stores	Garages (31)	Printers
Cleaners (25)	Glass dealers	Radio service stores
Clothing shops	Grocers (156)	Real-estate offices
Confectioners	Heating plants	Restaurants (72)
Contractors	Ice-cream manufacturers	Schools
Dairies	Insurance offices (52)	Sheet-metal works
Dentists (26)	Jewelry stores	Shoe repair shops
Drug stores	Machine shops	Shoe stores
Electricians (31)	Oil stations (34)	Trucking firms (26)
Filling stations (74)	Optometrists	Typewriter dealers



ers, and will provide a letter of introduction to identify you as an interviewer in your school survey. You will also need the teacher's help in preparing cards for recording the data, making up questionnaires if they are to be used, and assembling the data once it is collected.

The findings of the survey must be summarized by bringing together all of the information obtained, data

from other sources, background information, and notes about any of the local jobs. Then the findings should be interpreted in light of the original purpose of the survey. The survey may also be illustrated with photographs, graphs, maps, and hand-made charts. The results make good material for the newspaper, local broadcasting station, or an assembly program for the whole school.

### For Discussion

1. What jobs can be observed along the main street of your town?
2. What workers in a community are hidden from view?
3. If you feel that there are better jobs for you outside of your own community, explain why.
4. What local employment opportunities does your community provide?
5. What is a community survey?
6. What is an occupational survey?
7. How would you begin an over-all plan for a survey?
8. What jobs have the greatest number of listings in the classified index of your local telephone directory?
9. Make a survey of the occupations of the parents of members of your class to find out what occupations are represented in largest numbers.
10. Plan a visit to some local industry or business, and discuss employment opportunities in that work.

### What to Read

*Everyday Occupations*, M. A. Davey, E. M. Smith, and T. R. Myers. D. C. Heath and Company, Boston, 1950. 451 p.

*Job Horizons*, Lloyd G. Reynolds and Joseph Shister. Harper and Brothers, New York, 1949. 102 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the study of jobs in your community.

<b>SUBJECT AREAS</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Make a map of your community showing the business and occupational areas.
<b>BUSINESS:</b>	Make a list of the different business opportunities in your community.
<b>ENGLISH:</b>	Write a success story about a local citizen who has made good as a journalist, an author, or an editor.
<b>HEALTH:</b>	Discuss opportunities for health work in your community and in your state.
<b>HOME ECONOMICS:</b>	Bring to class the woman's page of the local newspaper, and discuss the opportunities in your town for a girl trained in both home economics and journalism.
<b>LANGUAGES:</b>	What occupations in or near your community require a knowledge of a foreign language?
<b>MATHEMATICS:</b>	What local workers are earning their living by using mathematics all day long?
<b>MUSIC:</b>	Name the jobs, full- or part-time, held by persons in your town who are participating in some form of music—choirs, school music, radio or television music, and any other kind of work having to do with music. Which are paid jobs?
<b>OCCUPATIONS:</b>	Bring to class "Help Wanted" ads from the local newspaper and discuss the opportunities that are open.
<b>SCIENCE:</b>	What kinds of scientists or technicians work in the laboratories that are located in or near your town?
<b>SHOPWORK:</b>	What types of local shops employ students who have had shopwork in school?
<b>SOCIAL STUDIES:</b>	Bring to life your community's history by getting information on any old parades; old pictures and maps; oldest store; first school; industrial or civic progress. In what jobs in your community do you think a background of social studies is essential?



- Jobs Ahead!*, Reginald M. Cleveland and Frank B. Latham. Appleton-Century-Crofts, Inc., New York, 1946. 259 p.
- Occupational Guidance*, Paul W. Chapman. Turner E. Smith & Company, Atlanta, 1950. 635 p.
- Occupational Information—Its Nature and Use*, Max F. Baer and Edward C. Roeber. Science Research Associates, Chicago, 1951. 603 p.
- Occupational Outlook for . . . (each state)*. (Ask for your state.) V. A. Pamphlet Series 7—2, Bureau of Labor Statistics. U.S. Government Printing Office, Washington 25, D.C., 1947. 12 p. each. (10 cents each)
- Occupations Today*, John M. Brewer and Edward Landy. Ginn & Company, Boston, 1949. 382 p.
- Planning Your Future*, George E. Myers, Gladys M. Little, Sarah A. Robinson. McGraw-Hill Book Company, Inc., New York, 1953. 526 p.

## CHAPTER 6 CHOOSING YOUR OCCUPATION

Your daily occupation will act as one of the greatest influences in your life. Whether you strive for a comfortable living or an exciting career, your occupation will largely determine your friends, your mode of living, and your way of life.

**What do you want out of life?** People in our country generally attempt to appraise almost anything, even the fine arts, in terms of money. Too many people think of work in terms of the pay check. Since World War II our sense of money values has been upset. Workers have had their pay raised. Strikes have been settled by increasing wages. Incomes that were high in 1940 now produce only a comfortable living because living costs have risen higher than ever before in history. It is natural to consider pay as a reward of work because we must have enough money to live on and to buy food, shelter, and clothing for the family. Money, however, buys only goods and services. It cannot purchase love, health, or happiness.

Think of what you most desire from life and work. You want a chance to gain an education because an educated person is able to adjust

to his surroundings. You want health and physical well-being, not only to feel well, but to work well. You want the personal satisfaction of being accepted by your circle of friends. You want a home and family. You want security in your job so that you will not be worried with unemployment. Some will add to the list such aims as wealth, power, and fame, and some will achieve these ends. However, most of us will enjoy simple living and find happiness in being good, average citizens. Decide what you want most out of life, and consider occupations in light of what you decide.

**How we make choices.** Occupational choice was simple when our country was young and devoted to agriculture. Girls had no opportunities other than to become homemakers or be dependent upon a man relative. Boys could see craftsmen at work on the common occupations because there were few machines or factories. By observation they were able to make a reasonable choice of jobs that held their interest.

Today occupational choice is more complex. It is no longer possible to choose work by observing craftsmen on the job because work has become





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Finding a satisfactory occupation depends on many factors—interests, abilities, personality. Even within the same groups the requirements might change. What particular qualities do you think a seed salesman would have to have that differ from those of a man who sells shoes?

highly specialized in large plants and factories. Some workers do just one routine job day in and day out on an assembly line or by a similar method. Machines with tremendous output have replaced great numbers of craftsmen as well as manual laborers. Today, however, young people have many other ways of obtaining occupational information before making choices.

Before you can choose anything intelligently, you must have some basis for your choice. Choosing without knowing is merely taking a chance,

as you do when you reach into a grab bag for a prize. Given several options, you must know enough about each to select the one that suits your needs better than the others, stimulates your interest, and tests your sense of values. Otherwise you will choose blindly. Suppose, for example, that you were handed a hotel menu from which to select your choice of three foods that you had never eaten before: (1) teal, (2) truffles, and (3) turbot. Would you choose blindly, or would you find out what they are? By asking the

waiter you could make an intelligent selection. He would tell you that you could have (1) wild duck, (2) a vegetable, or (3) fish.

You must understand that you cannot choose between two things unless you have some knowledge of both. A small child might choose a silver coin in preference to a gold one of the same size because he does not have a sense of value. You cannot apply your sense of value to one without also weighing the value of the other. If you are selecting a suit of clothes, you must take into account the fabric, color, weight, style, size, usefulness, and price. If you are unable to evaluate these items for yourself, you consult someone who knows. You select with a purpose—for dress, for work, for church, for sports, for school, or for "show." You also select with regard to price and wearability.

Persons of different ages and experience choose according to their sense of value at the time. Women have learned to distinguish between wool, cotton, linen, silk, and synthetic fabrics. Men often choose according to trade-marks or manufacturers symbols that are known to stand up under tests of time and wear.

So, in selecting an occupation, you must learn how to choose one field of work in preference to another. This means that you must know something about each field of work that is up for choice. After investigating an early choice, you may change your

mind when you find out more about the work and preparation for it. As you learn more about work and become more discerning, you will try to analyze factors and opportunities that seem to suit your needs, interests, and abilities.

**Our changing world.** We live in a constantly changing world, full of ups and downs, and often plagued with new and complex problems. New discoveries in science have increased our ability to live well, but stiffer educational requirements are required with every advancement of knowledge. Machines have taken away many backaches caused by manual labor, but they have also replaced the laborers themselves. One semi-skilled worker who operates a machine today actually takes the place of scores of laborers who formerly did the same work by hand.

Living conditions have changed. People tend to live more and more in cities and to depend more upon many cooperative services. Many choose to live in small apartments rather than undertake the work, worry, and expense of owning their own homes.

The art of self-entertainment has disappeared, giving way to the passive forms of commercial pastimes—television, movies, radio, sports events, night clubs—where we sit and listen or watch without any active participation.

Young people need more training in school than formerly because they must compete for employment with



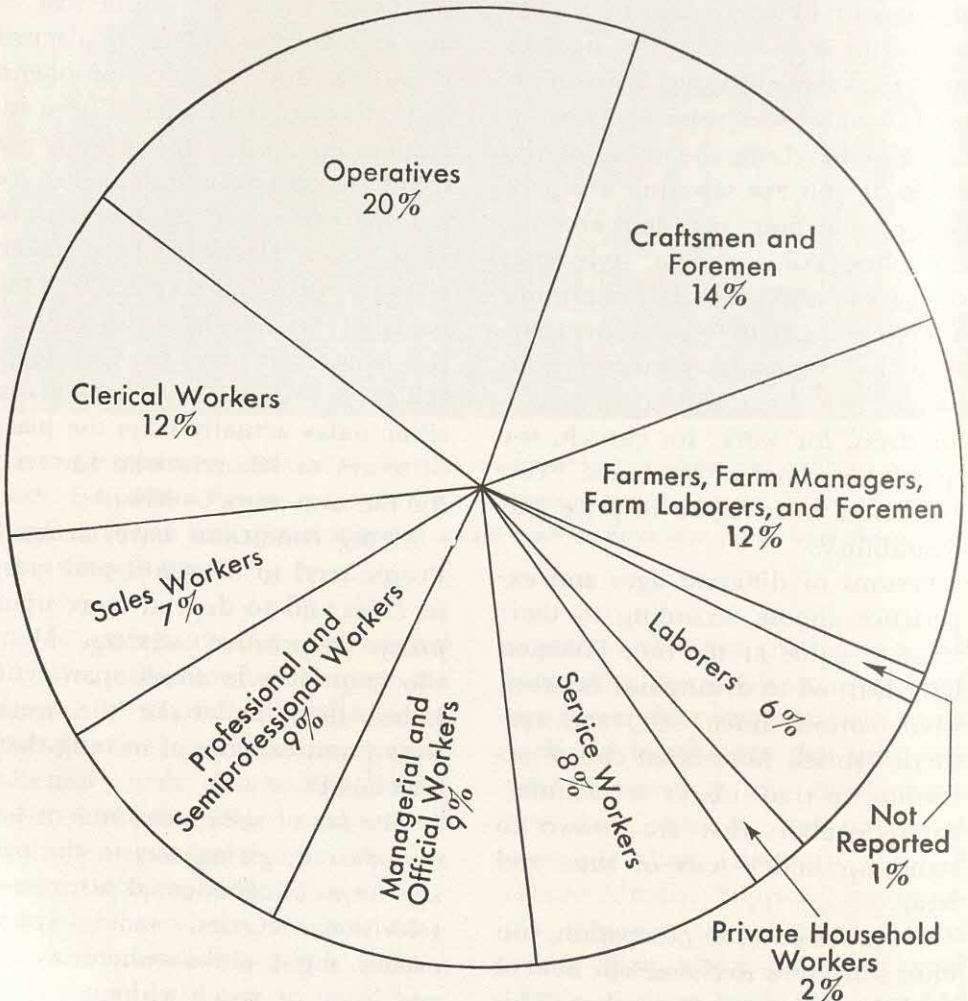
well-trained workers. Those who leave school before graduation are unprepared for future work, but they are not conscious of this fact until they find that their jobs have no

future and that advancement is impossible.

It has been said that there is nothing permanent in this world except change. People change constantly as

### DISTRIBUTION OF WORKERS BY MAJOR OCCUPATION GROUPS

(According to the 1950 Census reports)



SOURCE: 1950 CENSUS DATA

In past years many men and women in the United States worked in the group of laborers. Today most of the people who might formerly have been in this group learn how to operate simple machines that do the work of thousands of laborers. Therefore, 20 percent of our working population today are "operatives," while only 6 percent are laborers.

they grow older year by year. Marriage changes one's circle of friends. Parenthood brings new interests in children. Retirement from active work comes with old age. Likewise, occupations change with time, people, legislation, styles, fashions, and inventions. The modern worker, therefore, must be ready to forget the old and accept the new as conditions demand.

In words as fashions the same rule will hold,

Alike fantastic if too new or old:

Be not the first by whom the new are tried,

Nor yet the last to lay the old aside.

POPE

**When to choose an occupation.** The time when you should begin to investigate occupations depends upon your mental maturity and the number of years you expect to remain in school or college. Maturity and necessity, rather than age, will affect your choice of work. Some students become serious about such matters earlier than others because they have learned to make the most of their opportunities to find an aim in life. As soon as you become interested in the various ways that people earn their living, it is time for you to make a tentative choice for yourself.

Pupils in grade schools often make occupational choices. Occasionally such an early choice is real, but more often it is colored by wishful thinking or offhand advice from relatives

and friends. The first year in high school, although somewhat early to make a serious choice, nevertheless allows for occupational study and plans for making the best use of subject matter that high school offers.

As high school students approach graduation, they become more and more aware of the occupational world. Graduation means that they must choose at once between further education and training or immediate employment. As far as interest in employment is concerned, the senior year is the important time to make vocational decisions. The senior year, however, is too late to take advantage of course-offerings in high school.

Those who drop out of school need the friendly advice of the counselor before they leave. Necessity prevents some from finishing school. Those with ambition often can manage to attend evening school or otherwise prepare for some work that will utilize their abilities to the fullest extent. Many who drop out of school enter the skilled and semi-skilled trades because they find the studying required in school too difficult or else not in line with the kind of work they want.

High school graduation means the end of education for many. Lack of finances may prevent some good students from continuing their education through college. Those who use their time to best advantage must study occupations and choose a field of work before they leave high school. Otherwise, without a plan,





COURTESY JERSEY CITY (N. J.) BOARD OF EDUCATION

In large schools several counselors are necessary to interview all the students. Full-time or part-time counselors try to help young people to know about the kinds of jobs for which they might want to prepare themselves.

advancement will be difficult after the first year or two of work.

**Finding a field of work.** Many school systems now employ counselors, either full-time or part-time, to help young people learn about the world's work and how to prepare for it. Librarians also will help you find printed occupational information in books, magazines, and pamphlets. Schools use many motion pictures to bring occupations to the classroom for study. Government departments publish occupational monographs concerning more than 200 occupations. Your teachers invite you to investigate these sources and often invite employers and others to talk to the students in school.

Even though you may have tenta-

tively chosen a field of work, you need to become acquainted with other related fields in order to understand how one occupation depends upon another. These relationships reveal themselves particularly in times of war, emergencies, strikes, and depressions. At such times many goods and services that customers take for granted disappear from the market because of lack of materials or lack of workers to produce them.

A study of fields of work in your own community will help furnish a background for choice of an occupation. When this time arrives, an intelligent choice will depend upon how well you match your interests and aptitudes with types of work that others are doing. Physical and men-

tal capacity, economic status, an acquaintance with training opportunities, and other factors must also be considered.

Be systematic about choosing a line of work. Occupations that are grouped in large fields of work all have something in common. First study all major fields of work and learn why such classifications are made. Then, by the process of elimination, reduce the number of major groups to a few that interest you. There will be several fields of work that do not appeal to you, but you should look into the other groups carefully.

**How to eliminate occupational groups.** Take the eleven major occupational groups of the U. S. Cen-

sus, shown in the table below, and compare the percentage distribution of workers among them. More than half (55%) of all workers are in four occupational groups, as follows: operatives, 20 percent; craftsmen and foremen, 14 percent; clerical and kindred workers, 12 percent; and managers, officials, and proprietors, 9 percent. Many of your classmates will enter occupations in these four groups, yet you may not be interested in such work. Then examine the other remaining groups.

If you like to work with your hands rather than with words and books, eliminate the professional and technical group because training for such work usually requires preparation in college where students get

### DISTRIBUTION OF EMPLOYED WORKERS

(According to the 1950 Census reports)

Major Occupational Groups	Percentage of Workers		
	Men	Women	Total
1. Professional, technical, and kindred workers	7	12	9
2. Farmers and farm managers	10+	1	8
3. Managers, officials, and proprietors, except farm	11	4	9
4. Clerical and kindred workers	6+	27	12
5. Sales workers	6+	8+	7
6. Craftsmen, foremen, and kindred workers	19	1+	14
7. Operatives and kindred workers	20	19	20
8. Private household workers	(.2)	8+	2
9. Service workers, except private household	6	12	8
10. Farm laborers and foremen	5	3	4
11. Laborers, except farm and mine	8	1	6
12. Occupation not reported	1	2	1
Total percentage	100	100	100



their knowledge from books, supplemented by technical work in laboratories. If you have had no experience in living on a farm, eliminate groups 2 and 10—farmers and farm managers; farm laborers and foremen. You may like selling goods and persuading people to buy products that you recommend. In that case check group 5—sales work—as a possibility. Consider group 8—private household workers. This group is mostly women who are in domestic service, so boys would eliminate it as well as girls who are not interested in the work. Group 9—service workers—includes barbers, waitresses, soldiers, policemen, janitors, and others who serve or protect. Eliminate this group unless you have some interest in these or related occupations. We do not consider group 11—laborers—as an occupational choice because anybody can do some kind of common labor work. Although your first job may be in this group, you need an occupational plan to advance to better jobs.

Since all workers in the labor force are included in the table, your task is to find some one or two groups in which you can develop an interest. You find such an interest by eliminating the groups which seem to be definitely out of the picture for you. Finally you arrive at one or two groups that include occupations you would really like to enter.

List a score or more of the occupations in one of these groups, and underline the three that seem of highest

interest to you. Make an intensive study of these three occupations. After you finish this study, you may find that you are no longer interested in any one of them. Your time has not been wasted, however, because you have learned how to choose and study occupations. Most high school students select occupations, study them, reject them, and make new selections until they find the most satisfactory one to follow.

Many who go to college delay occupational choice until the end of the sophomore year in college in order to decide upon major work and major courses. Occupational choice may continue for several years, not only during school days, but even after employment. First employment is not necessarily lifework. It is an experience in earning. It may be a planned progress. The worker may thus gain entrance to an industry or service through some entry job, like typing. But if he wants to progress, he must have a plan. By dint of hard study, work, and service he will try to put himself in a position to be able to accept advancement when opportunity presents itself.

**A lifetime occupation?** A few young people choose a definite field of work early, prepare for it, and stay in it all their lives. Those who choose the professions must decide early in order to put in the years of preparation required before they may enter practice. For example, a boy who goes into medicine must spend six or seven years in college and considera-



COURTESY OCCIDENTAL COLLEGE

This girl is being given a manual dexterity test by a psychologist. Tests are useful, along with personal interviews and past school records, to help in pointing toward fields of work for which a person might be best suited, but no good vocational service gives advice entirely on the basis of tests. A young person must make his own final choice of an occupation after using all the resources at his command.

ble money before he becomes a licensed physician. He will probably continue in medicine all his life unless some outside influence prevents him from continuing. If he is obliged to take up another occupation, he will probably use his medical training and experience in the other field

of work. Or a girl may take up the profession of teaching. It is likely that she will remain a teacher unless her teaching career is interrupted by marriage or offers of more lucrative jobs that require a background of teaching.

Likewise in the trades, young peo-



ple enter apprenticeship to become skilled workers. Most of those who become journeymen will remain in the trade, especially if it is a well-paid trade, although some will leave the work as they advance to other fields, including management.

On the other hand, most young people do not choose work for a lifetime. They take some local job that seems desirable, and, as they work, they learn of better jobs. They investigate such jobs and apply for them. They seldom have a choice of a number of jobs at one time but consider openings one by one. They advance by using first jobs as stepping stones to better work. If they give good service, they eventually find good opportunities. As they reach middle-age and look back over their progress, many find themselves in work that they had never dreamed of when in high school. Their careers have resulted from a background of experience, learning, and growing.

**Testing for an occupation.** Both parents and students ask, "Where can I find a test that will show what occupation I am best fitted for?" There is no such test or battery of tests that will reveal the one occupation you are best fitted for. In choosing a career you will find no magic formula or test to help you. Batteries of psychological tests may prove helpful as indicators of aptitudes and abilities in certain broad fields of work—as, for example, professional, clerical, or skilled fields. You may already know your interests in such broad

fields. It is too much to expect any test to help you select the one occupation out of 22,000 that would be best for you. You would probably be equally successful in several different occupations.

For a single job, however, psychological tests are fairly effective in predicting success or failure. Industry uses such tests to *select* applicants for certain jobs, such as "inspector" and "machine operator." Tests can be devised for any single job. For single jobs we could produce 22,000 tests, each of which would be good predictors. But this would not be feasible.

Tests are useful, along with personal interviews and past records, but they must be interpreted by trained counselors who use them as only one measure of an individual's ability. Approved testing services do not advertise in newspapers, magazines, or on the radio. They do not use unscientific methods, such as astrology, handwriting analysis, numerology, palmistry, phrenology, physiognomy, or other fortunetelling stunts. No good service offers counsel entirely or mainly by correspondence, by one interview, or by giving vocational advice entirely on the basis of tests.

You must make your own final choice of an occupation after using all your resources to discover adequate information. You should have the benefit of a face-to-face interview with a good school counselor who can be depended upon to give good information about occupations, requirements, training opportunities,





COURTESY STANDARD OIL CO. (N. J.)

Some men choose hazardous jobs which pay high wages. These **structural-steel workers (4-84)** have no fear of high places.



trends, qualifications, and related topics that fit your needs and desires.

**Ability to succeed.** In considering any occupation seriously, ask yourself: What are my chances to succeed in this work? Why do others succeed in it? What qualities made some men and women famous in this work? Before you can answer, you must not only know something of the duties and requirements of your chosen occupation, but also estimate your own interests, aptitudes, and skill possibilities for such work.

Are you able and willing to spend the time and money necessary for preparation? Can you picture yourself in friendly relations with other workers in this occupation? If necessary, would you be willing to be away from home a great deal? Would you object to night work, work that restricted your personal activities, or work that was carried on in some lonesome place? Whatever the conditions, if you are to succeed, your job must form a desirable part of your life and living.

If there is a family business, your job may be cut out for you very early in life, but you must have a very definite idea about whether or not you would like it and whether or not you have the interests and aptitudes to

prepare for it and succeed in it. It must be remembered that interests, aptitudes, and skills are not necessarily passed on from father to son.

**Interest in the work.** To be successful in your work, you must have an interest in what you do. For the average boy who likes to find out how an engine works, an interest in auto mechanics is quite understandable. But some boys do not like taking engines apart and are not interested in mechanics. Interest in selling is understandable to those who like to buy and sell, but some persons have no knack for selling and do not like to trade. You can name a number of jobs that you would enjoy doing and others that you would find distasteful. You will profit by choosing work that appeals to you, that stimulates your imagination, and that challenges your initiative. New interests develop with new experiences and new environments. Interests combined with aptitudes help us to gain skills. As we grow older, our interests take many different directions in the occupational world. Every job has its interesting phases, but it is well to be aware that every job likewise has its dull interludes and exasperating moments.

### For Discussion

1. What do you want most out of life?
2. In choosing a suit of clothes, what must you know about all of the suits from which you make a selection?

3. How does question 2 apply in choosing an occupation?
4. Why must we keep abreast of occupational changes as we grow older?
5. When is the right time to choose a career?
6. Would such time differ for different persons?
7. Why should a student choose a field of work rather than a single occupation?
8. Of the 11 occupational groups of the U. S. Census, what 3 interest you most? Why?
9. Name several local persons who have been in the same occupation all of their lives.
10. Why is it impossible to find the occupation you are best fitted for by means of a test?
11. Explain why choosing an occupation is a long process rather than a short one.
12. How is a test helpful in determining fitness for a single occupation?
13. Without regard for salary, qualifications, and training, what work would you really like to do?

### What to Read

- Careers for Tomorrow—A Guide to Vocations*, Carrington Shields. Civic Education Service, Washington, D.C., 1952. 179 p.
- Choosing Your Career*, J. Anthony Humphreys. Science Research Associates, Chicago, 1949. 48 p.
- Everyday Occupations*, M. A. Davey, E. M. Smith, and T. R. Myers. D. C. Heath and Company, Boston, 1950. 451 p.
- Exploring the World of Jobs*, Donald E. Kitch. Science Research Associates, Chicago, 1952. 40 p.
- 4-Square Planning for Your Career*, S. H. Hamrin. Science Research Associates, Chicago, 1946. 200 p.
- Highways to Jobs for Women*, Josephine H. Gerth. The Woman's Press, New York, 1948. 131 p.
- How to Choose That Career: Civilian and Military*, S. Norman Feingold. Bellman Publishing Company, Cambridge, Mass., 1954. 52 p.
- How to Find the Right Vocation*, Harry Dexter Kitson. Harper & Brothers, New York, 1947. 163 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern choosing an occupation.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Discuss art workers—architect, art editor, artist, fashion designer, interior decorator, free-lance artist.
BUSINESS:	Show how high school business courses help students to qualify for jobs as typist, secretary, office clerk, bookkeeper, or accountant.
ENGLISH:	Discuss jobs that require specialization in English—actor, clergyman, lecturer, broadcaster, advertiser, editor, librarian, reporter, writer.
HEALTH:	Mention jobs in health work for beginners.
HOME ECONOMICS:	Discuss reasons why every homemaker should be trained for a second occupation aside from that of homemaking.
LANGUAGES:	What kind of jobs in the United States require some acquaintance with a foreign language?
MATHEMATICS:	Explain why students who choose mathematics as a career must also choose another major field of work in which to apply mathematics.
MUSIC:	Discuss occupations in music other than that of musician—dancer, instrument repairman, piano tuner, music critic, music teacher.
OCCUPATIONS:	Outline a tentative plan, including preparation, for the occupation that at present you believe you would like to enter.
SCIENCE:	Pretend that you are a scientist—bacteriologist, chemist, engineer, laboratory technician, or physicist—and try to persuade someone else to prepare for your work.
SHOPWORK:	In your community, how does one choose a shopwork course from among those offered in a vocational school?
SOCIAL STUDIES:	Discuss one job that a study of social studies may lead to—curator, genealogist, historian, social worker, or history teacher.

- I Find My Vocation*, Harry Dexter Kitson. McGraw-Hill Book Company, Inc., New York, 1954. 282 p.
- The Job That Fits You and How to Get It*, John Wells and Enid Wells. Prentice-Hall, Inc., New York, 1946. 423 p.
- Planning Your Future*, George E. Myers, Gladys M. Little, and Sarah A. Robinson. McGraw-Hill Book Company, Inc., New York, 1953. 526 p.
- Vocational Planning*, Frank S. Endicott. International Textbook Company, Scranton, Pa., 1948. 147 p.
- Your Future Is What You Make It*. National Association of Manufacturers, 14 W. 49 St., New York 20, 1948. 30 p. (Free)
- Your Future Job*, James H. Bedford. Society for Occupational Research, Ltd., Los Angeles, 1950. 366 p.
- Your High School Record—Does It Count?* Robert D. Falk, South Dakota Press, Pierre, S.D., 1953. 124 p.
- Your Plans for the Future*, M. F. Detjen and E. W. Detjen. McGraw-Hill Book Company, Inc., New York, 1947. 294 p.



Young people generally prepare for occupations in school or in college, although quite a number learn trades through apprenticeship or work on the job. The number of years of training you need in school depends upon the occupation that you choose for your future work. The amount of schooling also depends on how much preparation you need in order to compete with others of your own age who will be seeking employment.

### EDUCATIONAL BACKGROUND

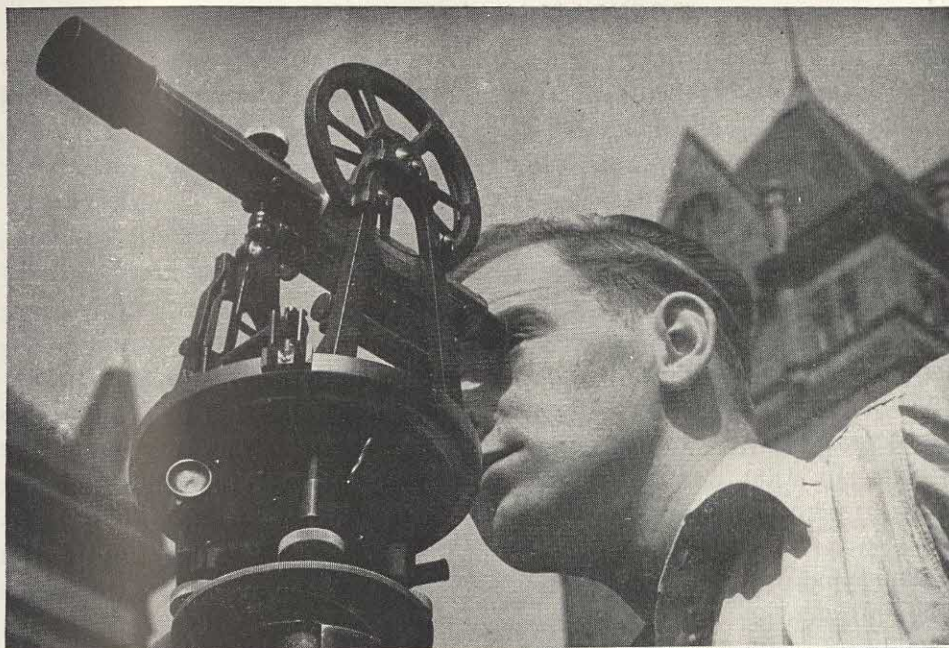
According to the U. S. Census report of October 1952, young people between 20 and 34 years of age have had a typical schooling of 12.1 years, or a little more than 4 years of high school. This is 3 to 4 years more of schooling than older persons have generally had.

**Grade school.** Most occupations require workers to have at least a grade school education. A worker with a grade school education and no further training or unusual experiences may expect a modest living. However, many workers with only a grade school background have found their

lack of schooling a handicap to advancement. Those who have the time and energy attend evening schools, take correspondence courses, or study at home to make up for their lack of schooling.

**High school.** After grade school, graduation from high school is the next step that millions of boys and girls aim at each year. Today opportunities for ALL pupils to attend high school are far greater than ever before. For example, in 1900 only 11 percent of all youth 14 to 17 years of age were in high school. Today the figure is 75 percent. Since 1900 the number of students attending high school has increased from less than 1 million to more than 6 million.

This great increase in high school enrollment occurred largely in the 1920's and 1930's and brought in great numbers of young people from all social and economic levels. Before World War I most high schools were concerned mainly with preparing students for college. Since then, however, high schools have added many vocational courses to meet the needs of those who plan to enter employment as soon as they finish high school. At present, the trend in high



COURTESY DETROIT PUBLIC SCHOOLS

In college engineering courses, men who are studying surveying learn how to use a transit (top), and students of hydraulic engineering carry out laboratory experiments concerning water pressure (right).



COURTESY U. S. OFFICE OF EDUCATION



school education is toward preparation for life for all students, whether they are planning on further education or training after high school or on immediately entering employment.

**College.** Those who plan on entering the professions must study in college. In 1900 less than a quarter of a million students attended college. In 1950 more than  $21\frac{1}{2}$  million students registered in 1889 institutions of higher education, and half of these students were veterans of World War II. The veterans proved to be good students and provided stiff scholastic competition for the young high school graduates who entered college. When there are large enrollments and the colleges are crowded, it is not always possible to enter the college of your first choice.

**Drop-outs.** The holding power of schools and colleges has been weak. Of the pupils who enter grade schools, 10 percent never reach the eighth grade. Forty-two percent of all high school students who enter as freshmen drop out before graduation. During the second and third years, nearly a third of the original

entering class drops out. Only 58 percent of those who begin high school remain to be graduated. Likewise, of those who enter college, half never finish.

The reasons given for dropping out of high school are various: a desire to work, lack of money, having to help the family, parental disinterest, illness, a feeling of not belonging, studies too difficult or impractical, or a lack of interest in school. However, the real reasons are often different from those stated. Many studies show that pupils leave school for the reasons listed in the table below.

At first, those who drop out of school enjoy a new independence in earning money and being free from study. But such enjoyment is short-lived. After a few years, they regret that they did not finish school. Their opportunities for advancement disappear. They have no time for further training because of family obligations. They realize, perhaps for the first time, that good jobs with a future require both education and experience, and young people in the tenth and eleventh grades do not

### WHY PUPILS LEAVE HIGH SCHOOL

Lack of interest in high school work

Lack of general ability

Lack of financial security, or need to go to work at an early age

Overage—1 to 3 years older than their classmates

Lack of cultural atmosphere in home and neighborhood

have either. A good job at 16 years of age is likely to be disappointing at 30.

### HIGH SCHOOL OFFERINGS

High schools offer a dozen or more major subjects and departments, depending upon the size of the school. In one way or another all high school courses of study contribute to the various occupations at which people earn a living. In high school you do not specialize, but you aim to get as wide an educational and cultural background as possible in preparation for more advanced work and study, for employment, and for living. A high school education furnishes a common meeting ground for people in all walks of life and in all occupations.

In the public high schools a few vocational courses qualify students for immediate employment. However, most high school vocational courses are preliminary. Further training through apprenticeship is necessary before qualifying for special licenses or meeting union requirements. Those who intend to specialize must go to technical schools, colleges, and universities for advanced training. For example, a girl who studies typing in high school might gain enough skill to find employment as a typist; but a boy who is preparing to become an accountant must continue his training after high school in a special school of accountancy, no matter how many business

education courses he may take in high school.

All major subjects in high school are in some way related to job requirements and furnish an academic background necessary for different kinds of work. High schools generally offer the major subjects described in the following pages. After each major course a number of occupations are mentioned, each of which is directly related to the classroom subject. To become employable in any of the occupations mentioned, you should first take the basic major course offered in high school and follow this study with whatever additional training is required for employment. You will find additional suggestions under "How to Relate School Subjects to Occupations" at the end of each chapter.

*Agriculture.* The study of vocational agriculture in high school leads to farming, farm management, dairy work, and related activities. Those who wish to become agricultural specialists, demonstration agents, veterinarians, or other professional agricultural workers must continue study in the state agricultural college or a similar institution.

*Art.* High school art courses help in determining whether a student would be likely to succeed as an architect, artist, cartoonist, designer, fashion expert, photographer, sign painter, or art teacher. Those who qualify usually continue study in a good art school.

*Business education.* Clerical work-



ers prepare in high school to become bookkeepers, cashiers, file clerks, office clerks, office-machine operators, typists, and stenographers. Many gain proficiency by continuing training in a local business college.

*English.* All occupations require workers to read, write, and speak English acceptably. Those who plan on becoming an actor, broadcaster, clergyman, hostess, salesperson, teacher, writer, or librarian must have experience, additional training, or both.

*Health and physical education.* These studies are related to such jobs as athlete, sports manager, health worker, safety engineer, or recreation worker. Usually, additional training in college is necessary for employment in these jobs.

*Home economics.* In home economics courses girls not only learn homemaking but also gain an insight into such careers as dietitian, fashion designer, stylist, tailor, teacher, journalist, or editor. Such professional workers in home economics must have college training, however.

*Languages.* In this country foreign languages are essential in a few occupations: buyer, importer, customs inspector, foreign-service officer, interpreter, soloist, or language teacher. To be fluent in a language requires training beyond high school and opportunity to use the language in a practical manner.

*Mathematics.* Every worker needs a basic knowledge of mathematics. Those going in for skilled work or

professional work need additional mathematics, including algebra. If you are good at mathematics, you may aim for such occupations as accountant, architect, auditor, banker, bookkeeper, draftsman, engineer, scientist, optician, researcher, statistician, surveyor, or teacher.

*Music.* For personal satisfaction everybody needs some training in musical appreciation. To earn your living at music you will need all of the high school music courses offered and additional training to become skilled. Occupations in music include teachers of public school music and private music teachers. Long study is necessary to become a composer, instrumentalist, or vocalist.

*Science.* High school science courses give you your first introduction to the systematic study of biology, physics, and chemistry. By taking such courses you will find out the extent of your interest in the laboratory sciences, but extensive training in college is necessary before applying for a job in the sciences.

*Shopwork.* In vocational courses you learn to use tools skillfully and to read blueprints. Such courses are an introduction to apprenticeship. You must continue with on-the-job training to be employable.

*Social studies.* The study of history, civics, and other social studies focuses attention on man and his environment. Occupations in this field—archaeologist, case worker, clergyman, economist, historian, librarian, psychologist, social worker—require



COURTESY DETROIT PUBLIC SCHOOLS

Business education courses, such as stenography and typing, and vocational courses, such as beauty culture, which are offered in some of the larger schools, are popular with many high school girls because they know that with the required training in these skills they can get a job immediately after leaving high school.



COURTESY MINNEAPOLIS PUBLIC SCHOOLS



*Home jobs:* regular planned household jobs, 4-H Club projects, and vocational homemaking projects—these particularly for junior high school pupils

*Farm jobs:* projects in vocational agriculture, farm laborer, picker, harvest hand, packer

*Office jobs:* bank messenger, mail clerk, file clerk, duplicating-machine operator, typist

*Industrial jobs:* stock boy, shipping clerk, inspector, assembly work

*Technical jobs:* laboratory assistant, receptionist, draftsman, tracer

*Distributive jobs:* sales clerk, news-boy, cashier, packer, marker, wrapper

*Service jobs:* bus boy, waitress, delivery boy, gas-station attendant, usher, household worker, automobile-mechanic helper, car washer, parking-lot attendant

The student in a work-experience program must meet employment requirements with respect to age, health, interest, and ability. In the work-experience program he will receive a new educational experience to help him in exploring jobs, knowing better what work he does or does not want to do, in seeing the value of his school studies, and in deciding which ones he needs the most. He becomes aware of important work habits and business policies. He sees the necessity of being on time, of being dependable, of following directions carefully, of developing initiative and

responsibility, and of gaining competence. He gains a new respect for authority. He acquires a sense of independence and security because he learns the value of money in terms of hours of work. He is better able to budget his earnings because he learns how far his money will go to cover his living expenses. School work takes on more significance the moment it is related to real employment. His part in developing good public relations between school and local industry is a leading one. Lastly, his work experience will help him in securing a full-time job later on.

Objectives of work-experience programs in general vary in different localities with both short- and long-term periods, but the advantages in them are many: (1) Certain students who otherwise might drop out for full-time employment tend to continue in school. (2) Working conditions of students employed outside of school hours tend to improve under school supervision, and there is less illegal employment of young people—that is, of young people under the working age or for longer hours than are allowed by state law. (3) Students employed outside of school hours are helped, through counseling services, to find jobs related to their interests and abilities. (4) The transition from school to work is made easier for those students who are not sufficiently interested in the school curriculum to remain in school until graduated.

Educators generally agree that work experience is a valuable asset for helping students to make better vocational and educational choices through having some knowledge of the occupational world. The National Child Labor Committee of New York holds that work-experience programs (1) prevent industrial exploitation of young people under the guise of education; (2) bring part-time employment of secondary school students, which is legal in all states, under school supervision and control; and (3) adapt supplementary school classroom programs to the interests of students who, because of higher age limits for employment, are held in school through the operation of child labor laws. Lack of interest has been a very large factor in causing students to leave school. An opportunity to work part time under a school program may induce more young people to remain in school beyond the compulsory attendance age rather than drop out completely to enter a full-time job in industry and regret it afterward.

### **PUBLIC VOCATIONAL SCHOOLS**

The program for vocational education of less than college grade was first provided when the Smith-Hughes Act was passed by Congress on February 23, 1917. Since then, from time to time, Congress has enacted supplementary legislation. The latest National Vocational Education Act, passed in 1946, is commonly

known as the George-Barden Act. All such legislation has been enacted for the purpose of promoting and developing vocational education through a plan for cooperation between the states and the Federal Government.

Vocational training is sometimes offered in separate vocational school buildings, and sometimes it is offered in the same building with the academic high school. Instruction is offered in three types of schools in or near your community: (1) all-day schools, (2) part-time schools, and (3) evening schools. About 2 million boys and girls are enrolled in four different types of vocational education programs: (1) agriculture, (2) home economics, (3) distributive education, and (4) trade and industry.

#### **Vocational education in agriculture.**

The purpose of vocational education in agriculture is to increase farming skill on the part of those now engaged in farming and to prepare boys who wish to establish themselves in farming or related agriculture. Instruction is given for four student groups: (1) students preparing for farming in all-day classes (nearly a quarter of a million are enrolled); (2) students preparing for farming in day-unit classes; (3) out-of-school young men enrolled in part-time classes for developing ability in farming; and (4) adult farmers in evening classes.

**Vocational education in home economics.** Vocational education in home economics prepares girls for





COURTESY COYNE ELECTRICAL SCHOOL

A variety of practical courses—such as radio (above)—are offered by private trade and technical schools in large cities.

the responsibilities and activities involved in homemaking. This is not intended to be a career course. Over half a million girls are enrolled in the all-day schools alone.

**Distributive occupations education.** Distributive occupations are those

followed by workers engaged in merchandising activities, or in contact with buyers and sellers: (1) distributing the products of agriculture and industry to consumers, retailers, jobbers, wholesalers, and others or selling them services; and (2) managing

or conducting a retail, wholesale, or service business. No all-day schools offer work in distributive education because the learner must work part time in business and part time in school in a *cooperative training program*. A large number of occupations may be learned through the cooperative training programs sponsored by the public vocational schools. Through this program students work half time for pay, in their chosen industry or business, and study half time in a vocational school in subjects directly related to their occupation. The program is for those who must, because of necessity, have half-time paid employment and who are not interested in apprenticeship. Your school principal will direct you to schools in your community that offer education in the distributive occupations.

### Trade and industrial education.

Trade and industry programs in all-day trade schools of less than the college grade offer a variety of courses known as "trade preparatory education." These courses prepare for "advantageous entrance into industrial employment." This means that although the schools actually turn out few fully trained workers, the students develop some of the necessary skills and gain some of the related knowledge needed by successful workers in the trades for which they are being prepared. They are then able to enter the trades for further training on the job and to finish their training through actual employment. Often training secured in a trade school shortens the time of apprenticeship required by the trade.

Each year approximately 150,000 boys and 30,000 girls enroll in these

### TRADE AND INDUSTRIAL COURSES THAT STUDENTS CHOOSE

Vocational Courses in Trade and Industry	Percentage Enrolled	
	Boys	Girls
Metal trades	29	1
Mechanical service and hand trades	19	1
Electrical trades	16	1
Building and construction trades	14	0
Printing and publishing trades	6	7
Aircraft manufacturing and maintenance trades	5	0
Garment and textile trades	2	54
Food trades	1	9
Domestic and personal service trades	0	26
Miscellaneous trades	8	1
	100	100



all-day trade schools. Boys generally go in for metal trades, mechanical service, hand trades, electrical trades, and building and construction trades. Girls choose the garment and textile trades or the domestic and personal service trades.

The courses they choose are indicated in the table on page 103. Each of the groups includes a number of related occupations. The enrollments do not strictly represent *first choices* because in different schools and localities offerings may be limited to three or four courses only. Only a few schools actually provide all the vocational courses listed. Many of those enrolled, therefore, were obliged to take what the school offered rather than what they wanted to study.

Information about the public vocational schools in your state may be obtained from the Director of Vocational Education, State Department of Education, your state capital.

### PRIVATE TRADE SCHOOLS

Private trade schools, managed for profit, are established in every large city. Such schools are listed in the local telephone directory. The larger the city, the greater the number of such schools. Private trade schools offer preparation in accounting, art, beauty culture, business, dancing, Diesel engines, drafting, electricity, journalism, languages, music, photography, radio, speech, theater, watchmaking, and writing.

Although thousands of local students enroll in these schools, no national count has ever been made either of the number of schools or of the students enrolled. Information about these institutions is, therefore, difficult to obtain. Because there are no accrediting agencies for these schools, there is no list of approved institutions, and no general directory is published. Most of the private trade schools attract local students only. You may find the names and addresses of the private trade schools in your locality by consulting the classified index of the telephone directory or by looking at the educational advertisements in the local newspaper.

You should investigate the reputation and financial standing of any private trade school before you enroll. Some schools, long established, offer excellent instruction. Some schools, recently opened, may or may not prove a waste of time. To be sure about a school, write to your state department of education and also inquire of the local superintendent of schools in the city where the trade school is located.

### JUNIOR COLLEGES, TECHNICAL INSTITUTES, AND COMMUNITY COLLEGES

Junior colleges that offer two years of college work are established in every state except Nevada and New Mexico and fit students for semiprofessional jobs and clerical work.



COURTESY AMERICAN PETROLEUM INSTITUTE

Each year industrial concerns send representatives to the college campuses to recruit new graduates for interesting jobs. Often graduates are placed as soon as they leave college. Here members of the graduating class at a large university are looking over a list of company interviewers scheduled for visits to the campus during a single month.

Industry has indicated a need for more persons with two years of training beyond high school to fill technician jobs rather than professional jobs. In response to this need, "technical institutes" and "community colleges"—seeking a level between trade training and professional training—are gradually appearing.

The technical institutes offer terminal, nonprofessional courses that prepare graduates for immediate employment. Some technical institutes offer programs of a technological nature, intermediate between high school or vocational school and the engineering college, and about 20 such institutes have been approved



by the Engineers' Council for Professional Development. In New York State five new institutes of applied arts and sciences offer courses in dental laboratory technology, metallurgical technology, electrical technology, chemical technology, retail business management, mechanical technology, hotel technology, commercial and industrial design, building construction, dental hygiene, and food technology.

Community colleges are local institutions that offer a combination of technical and general education. These institutions aim to provide youth with low-cost educational opportunity beyond high school while living at home. Most of the community colleges have been established in recent years. No adequate directory of technical institutes or community colleges has yet been published.

### COLLEGES AND UNIVERSITIES

Colleges and universities offer advanced study that every student needs if he plans to enter a professional or scientific occupation. The

professional schools of law, medicine, engineering, and others enroll students who have made a final choice of the fields of work which they plan to enter.

Before a student chooses a college, it is well for him to make at least a tentative choice of his future occupation. For example, if a boy chooses to become an accountant, he looks for the school most likely to provide him with the desired training. He does not choose accountancy merely because a school of accountancy is located near his home.

By choosing work in liberal arts, a student may put off his choice of an occupation for a year or two after he enters college. By the end of his sophomore year, however, he should be able to decide on his future occupational field and choose his last two years of major work accordingly. Many seniors who prepare for some form of industrial work are interviewed on the campus by employers or "scouts" who are sent out by large industrial firms to select workers for jobs that are open. Seniors who are prepared in a certain field of work and are recommended by college in-

### CLASSIFICATION OF COLLEGES AND UNIVERSITIES IN THE UNITED STATES

<i>Kind of Institution</i>	<i>Number of Institutions</i>
Non-degree-granting colleges (2- to 4-year institutions)	529
First degrees (bachelor's or first professional) granted	806
Second degrees (master's or second professional) granted	379
Ph. D. degrees or equivalent granted	159
Special degrees granted	16
Total number of institutions of higher education (1953)	1889

structors often receive offers of jobs as soon as they finish college.

Planning for college while you are in high school is a matter that deserves careful consideration. In order to help you in deciding whether or not you should go to college, you might ask yourself these questions:

Am I of college caliber?

Why should I go to college?

What type of college do I prefer?

Has my I. Q. been interpreted to me by a school official? ("I. Q." means intelligence quotient as determined by psychological tests.)

Do I like books and am I able to learn from books?

Can I read at a speed of at least 200 words per minute?

What are my strong and weak points on school achievement tests?

Do I try to increase my vocabulary every day?

Have I a good occupational reason for going to college?

If you decide that you should go to college, your next step is to find out what kind of institution will give

you the best education. The institutions of higher education, totaling 1889, are classified in the table on page 106, according to their highest level of offerings. The *Education Directory*,<sup>1</sup> published annually by the U. S. Office of Education, gives considerable information about each of these institutions.

The cost of going to college for a school year of 9 months has become an expensive item. Generally the cost is lowest at the state college or university or at a college near home, in which case the expenses of traveling to and from school is eliminated. Rates are somewhat higher in the church-controlled colleges and highest in those privately endowed. Rates are highest in women's colleges, and a girl's expenses are higher than a boy's even in coeducational institutions.

Most colleges provide scholarships to aid worthy students financially. Special scholarship blanks should be

<sup>1</sup> *Education Directory, Part III: Higher Education*, U.S. Office of Education. U.S. Government Printing Office, Washington 25, D.C. (40 cents)

## USUAL ENTRANCE REQUIREMENTS FOR COLLEGE

Subject	Units
English (10th, 11th, and 12th grades)	3
Mathematics through intermediate algebra	2½-3½*
Language (at least 2 years)	2-4
Science: biology, chemistry, or physics	1-2
History	1
Electives	5½

\* If an engineering student, mathematics through solid geometry



requested from the registrar of the college. In asking for a scholarship, you do not apply for a particular fund. Instead, you ask for an "application for scholarship" blank. On the basis of replies to questions on these blanks, the college makes its own awards, usually in the spring. Awards are made according to a student's need, ability, achievement, and likelihood of success. Scholarships are also awarded outside of college by such agencies as the state (competitive), churches, service clubs, women's clubs, and schools. Your principal will know about many scholarship funds.

Colleges provide many loan funds covering a part of the tuition for students who need money for expenses. A number of outside agencies, including fraternities, lodges, and foundations, also lend modest sums to able students on a basis of character as security. These loans must be repaid so that other needy students may borrow. Freshmen and sophomores are seldom eligible for such loan funds.

Large numbers of college students work part time in college to earn part of their college costs. Colleges generally provide some opportunities for such students, either on the campus or nearby, to work by the hour at such jobs as waiting on table, clerical work in offices, typing and stenography, library service, monitoring, laboratory work, janitor service, pressing clothes, and so on. Four hours of such work per day is enough for any student to attempt in college.

Entrance requirements vary from college to college, but the most usual pattern includes 15 units—one unit for each year's study in a subject.

It is important that you know and meet the entrance requirements of a particular college you plan to enter. Your high school record is a passport that some colleges accept, while others require applicants for admission to take college entrance examinations. This plan is explained in the free publication "Bulletin of General Information," College Entrance Examination Board, Box 592, Princeton, New Jersey.

### FACTORS CONSIDERED FOR COLLEGE ENTRANCE

- Rank in class (an important item)
- Recommendations of principal, teachers, alumni, and friends
- Personal interview, if possible
- Test results: aptitude, achievement, placement, and others
- Leisure-time activities
- An autobiography
- Honors, prizes, and awards that have been received
- Participation in school activities and sports
- Physical examination
- Religion (in denominational colleges only)

Most colleges receive many more applications for admission than they can accept. The Director of Admissions must drop many names and select only those that appear most likely to succeed in college. He can-

not *predict* but he does his best to *select* good college risks on the evidence of their past records. Some of the factors that he considers concerning applicants include those shown in the list on the opposite page.

### For Discussion

1. How many years of schooling do the majority of persons between 20 and 34 years of age finish today?
2. Explain why the level of education has increased for present-day students.
3. Why do so many students drop out of school before finishing their education?
4. List the subject areas and activities that your high school offers.
5. Select six major high school subjects and show their relationships to earning a living.
6. What vocational courses are offered in your community?
7. Make a list of careers for which private schools in your community prepare students. (*Note:* Include private music teachers and others.)
8. Who should go to college?
9. Explain why a good job at 16 years of age may be a poor job at 30.
10. What are work-experience programs?

### What to Read

#### Books:

- Choosing the Right College*, Annette Turngreen. Harper & Brothers, New York, 1952. 149 p.
- Handbook of Facts on Women Workers*. Women's Bureau Bulletin 242. U.S. Government Printing Office, Washington 25, D.C., 1952. 121 p. (30 cents)
- Lovejoy's College Guide*, Clarence E. Lovejoy. Simon and Schuster, Inc., New York, 1952. 246 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern preparation for an occupation.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	What art courses are offered in your school? In or near your community? In your state? (Consult the <i>American Art Annual</i> in your public library.)
BUSINESS:	List the courses in business that are offered in your school, in local business colleges, and in your state.
ENGLISH:	What are the usual college entrance requirements in English? To what jobs might an English major in college lead?
HEALTH:	Discuss occupations and preparation suitable for persons handicapped by lung trouble, heart trouble, deafness, blindness, etc.
HOME ECONOMICS:	What colleges in your state offer home economics majors? What types of jobs are open to graduates in home economics?
LANGUAGES:	What would be the quickest way to learn to speak a foreign language if your job depended upon it?
MATHEMATICS:	For what jobs in your community is a good foundation in high school mathematics usually essential?
MUSIC:	Compare preparation for a career in music as offered by private music teachers, conservatories, and music departments of colleges and universities.
OCCUPATIONS:	List as many schools as you can find out about in which graduates of your school have continued training after leaving high school.
SCIENCE:	List graduate schools in or near your state that offer professional training for a career in science.
SHOPWORK:	What courses in local vocational schools actually prepare students to enter the skilled trades upon the completion of such courses? What courses require additional training through apprenticeship?
SOCIAL STUDIES:	What social studies are offered in your school? Where in your state would you continue your training if you wanted to follow a career in social studies?

*Off to College—A Handbook for Girls Who Are Starting Campus Life*, Suzanne G. Emerson. John C. Winston Company, Philadelphia, 1949. 149 p.

*Your High School Days*, M. F. Detjen and E. W. Detjen. McGraw-Hill Book Company, Inc., New York, 1947. 248 p.

*Your Job—A Guide to Opportunity and Security*, Fritz Kaufman. Harper & Brothers, New York, 1948. 238 p.

*Your Plans for the Future*, M. F. Detjen and E. W. Detjen. McGraw-Hill Book Company, Inc., New York, 1947. 294 p.

#### DIRECTORIES:

*American Universities and Colleges*. American Council on Education, Washington, D.C., 1952. 1105 p.

*Education Directory, Part III: Higher Education*. U.S. Office of Education. U.S. Government Printing Office, Washington 25, D.C. (Annually). 189 p. (40 cents)

*Junior College Directory, 1952*, C. C. Colvert and H. F. Bright. American Association of Junior Colleges, 1785 Massachusetts Ave., Washington 6, D.C. 1952. 46 p.

*Scholarships, Fellowships, and Loans*, S. Norman Feingold. Bellman Publishing Company, Cambridge, Mass., 1949. 254 p.

*Scholarships, Fellowships, and Loans* (vol. II), S. Norman Feingold. Bellman Publishing Company, Cambridge, Mass., 1951. 312 p.



# 8

## CHAPTER 8 LEARNING A TRADE

### THROUGH APPRENTICESHIP

As a way of transmitting skills from one generation to another, apprenticeship is a practice that dates from antiquity. Today an apprentice is a person at least 16 years of age who, under written agreement, learns a skilled or semi-skilled industrial occupation requiring two or more years of supervised work experience on the job, supplemented by related classroom instruction.

**Training for skilled crafts.** In the United States foresighted employers and labor organizations have accepted apprenticeship since early days as the most satisfactory method of training for the trades. There is general agreement that apprenticeship is the most effective way to train for the skilled crafts and the only method for certain trades. Most of the trades mentioned in this chapter must be learned through apprenticeship, although a few may be partially learned in school.

For many years the Federal Government has trained apprentices in federal plants and shops, Navy yards,

arsenals, the Government Printing Office, and the Bureau of Engraving and Printing. Because apprenticeship is a concern not only of the Government but of all the people, Congress passed an act in 1937 authorizing the Secretary of Labor to extend the program by (1) setting up standards to guide industry in employing and training apprentices; (2) appointing such national committees as needed; and (3) promoting general acceptance of the standards and procedures agreed upon.

The Bureau of Apprenticeship of the U. S. Department of Labor carries out this function. The Federal Committee on Apprenticeship, made up of representatives of management, labor, and interested government agencies, recommends general standards and policies. These recommendations and answers to many questions raised by young people interested in learning a trade are explained in a 24-page bulletin, *The National Apprenticeship Program*, published annually by the bureau of Apprenticeship, U. S. Department of



COURTESY U. S. GOVERNMENT PRINTING OFFICE

**Printer apprentice (7-98).** The U. S. Government Printing Office trains many apprentice printers. In a 5- to 6-year apprenticeship they are given practical experience in the mono-type assembly section as a part of composing-room training. In addition, they attend a daily English class for drill in spelling.

Labor, Washington 25, D. C. The basic standards of apprenticeship, culled from this bulletin, are listed on page 115.

**State apprenticeship councils.** Each state department of labor has been requested to establish a State Apprenticeship Council. This State Council is usually made up of an equal number of representatives of employers and employees, a repre-

sentative of the State Board for Vocational Education, and a representative of the state department of labor. Using the basic standards of apprenticeship outlined above, the State Council sets up its own standards and procedures for industry to follow in employing and training apprentices. When recognized by the Bureau of Apprenticeship of the U. S. Department of Labor, the State





COURTESY U. S. DEPT. OF LABOR

**Structural-steel-worker apprentice (7-97).** Part of the apprenticeship for iron and steel workers is learning how to read a blueprint. Structural-steel workers are required to take a 2-year apprenticeship. Other metal workers, however, are required to take 4 years of apprenticeship.

Council becomes a part of the national apprenticeship system.

**Local joint committees.** Actual employment and training of apprentices takes place in local communities, where it is necessary to secure the interest and action of local employers and employees. This is done by the appointment of a local joint apprenticeship committee which develops standards governing the employment and training of all local apprentices by employers who are

willing to subscribe to the written apprenticeship system.

Standards for qualifications for employment concern the amount of required education, aptitude, age limitations, wages, hours of work, and other matters concerned with training apprentices. Training standards deal with the term of apprenticeship, the schedule of job processes for the apprentice, and the length of time he is required to attend classes for related instruction.

**Selection of apprentices.** Applicants are selected and employed according to the written apprenticeship program of the local trade or plant. As a rule, there are more applicants trying to find employment as apprentices than there are places to be filled. Opportunities are limited in the trades because no more apprentices are accepted than can be assured of employment after training. Sons or daughters of workers in a particular industry are selected first if they can meet the required qualifications. Other apprentices are selected from job applicants at the local offices of the State Employment Service. Therefore, a young person applying for an apprenticeship should cooperate closely with the local joint committee, the local vocational school, and the local office of the State Employment Service.



COURTESY U. S. DEPT. OF LABOR

**Plumber apprentice (7-96).** A plumber apprentice learns the plumbing trade in a 4- to 5-year apprenticeship under the supervision of a **plumber (5-30)**, who is a skilled worker.

### BASIC STANDARDS OF APPRENTICESHIP

1. An apprenticeable occupation is considered one which requires 4000 or more hours to learn.
2. A schedule of the work processes to be learned on the job
3. A progressively increasing scale of wages for the apprentice that should average approximately 50 percent of the journeyman's (skilled worker's) rate over the period of apprenticeship
4. Provision for related classroom instruction (144 hours per year of such instruction is normally considered necessary)
5. The terms and conditions of employment and training of each apprentice to be stated in a written agreement and registered with the State Apprenticeship Council (in states in which no Council is established review and registration is performed by the Bureau of Apprenticeship)
6. Review of local apprenticeship by a State Apprenticeship Council
7. Apprenticeship should be jointly established by the employer and the employees.
8. Adequate supervision and the keeping of records should be required for all apprenticeship programs.



# REGISTERED APPRENTICES IN THE UNITED STATES (December 31, 1948)<sup>1</sup>

Occupation Group			Apprentices			Occupation Group			Apprentices		
			Number	Percent					Number	Percent	
Construction workers			83,700	36		Printers			14,000	6	
Brick, stone, and tile layers			9,500	4		Compositors and typesetters			6,900	3	
Carpenters			38,700	16		Electrotypers and stereotypers			700	*	
Cement finishers			600	*		Lithographers			400	*	
Painters			7,200	3		Photoengravers			1,400	1	
Plasterers			3,800	2		Pressmen			3,500	1	
Plumbers and pipe fitters			20,200	9		Others			1,100	1	
Roofers and slaters			600	*		Nonmanufacturing workers			9,100	4	
Others			3,100	1		Linemen			4,000	2	
Electricians			19,500	8		Meat cutters			4,500	2	
Machine-shop workers			20,800	9		Others			600	*	
Machinists			11,200	5		Manufacturing workers			17,300	7	
Tool makers and die sinkers			8,700	4		Bakers			1,600	1	
Polishers and buffers			300	*		Loom fixers			300	*	
Others			600	*		Furriers			300	*	
Metal workers			18,800	8		Tailors			400	*	
Jewelers and watchmakers			4,600	2		Cabinetmakers			5,000	2	
Engravers			400	*		Upholsterers			2,100	1	
Sheet-metal workers			8,700	4		Shoe repairmen			1,000	*	
Molders			1,800	1		Stonecutters			600	*	
Foundry workers			300	*		Opticians and lens grinders			1,100	1	
Boilermakers			400	*		Painters (not construction)			400	*	
Structural-iron workers			1,000	*		Patternmakers			1,900	1	
Others			1,600	1		Others			2,600	1	
Auto mechanics			28,700	12		Workers not classified			13,300	6	
Mechanics and repairmen			6,800	3		Commercial artists			200	*	
Millwrights			400	*		Draftsmen			2,300	1	
Railroad mechanics			200	*		Laboratory technicians			1,800	1	
Airplane mechanics			500	*		Photographers			600	*	
Others			5,700	2		Cooks (not private family)			500	*	
Miscellaneous workers			1,300	1		Barbers and beauticians			2,000	1	
Engineers, stationary			100	*		Others			5,900	2	
Glaziers			1,100	1							
Others			100	*		All occupation groups			233,300	100	

(See footnotes on opposite page.)



COURTESY U. S. DEPT. OF LABOR

**Patternmaker apprentice (7-99).** Patternmakers make wooden patterns that are used in a foundry for casting the part in iron. Part of the apprentice training in this trade is learning how to sand the wooden pattern.

### PROGRESS IN APPRENTICESHIP PROGRAMS

	1941	1952
States having apprenticeship councils	26	27
Registered apprenticeship standards (written descriptions)	1180	62,000
Establishments participating in all registered standards	9800	182,000
Apprentices newly registered during the year	2782	60,000
Apprentices cancelled or quit during the year	415	53,000
Apprentices completed training during the year	719	34,000
Apprentices on active register at the end of the year	5168	156,000

Footnotes for table on opposite page:

\* Less than 1 percent.

<sup>1</sup> *Monthly Labor Review*, vol. 69, No. 2, Aug. 1949, p. 130. Bureau of Labor Statistics, U.S. Department of Labor, Washington 25, D.C.



## APPRENTICEABLE OCCUPATIONS

- Aircraft fabricator; Final assembler (aircraft manufacturing): 3-4 years  
Airplane mechanic (air transportation; aircraft manufacturing): 3-4 years  
Asbestos worker; Insulation worker (construction; heat and frost insulation): 4 years  
Automotive-body builder (automobile manufacturing): 4 years  
Automobile-body repairman; Body, fender, and paint mechanic (automotive service): 3-4 years
- Automotive mechanic (automotive service): 3-4 years  
Baker (bakery products; hotel and restaurant): 3 years  
Barber (personal service): 2-3 years  
Blacksmith (any industry): 4 years  
Boilermaker (any industry): 4 years
- Bookbinder (printing and publishing): female bindery worker, 2 years; male bindery worker, 4 years; ruler, 3 years  
Boot-and-shoe maker (any industry): 2-3 years  
Brewer (malt liquors): 2-3 years  
Bricklayer; Brickmason (construction): 3 years  
Business-machines mechanic; Office-machines mechanic (any industry): 3 years
- Butcher; Meat cutter (retail trade; slaughtering and meat packing): 3 years  
Cabinetmaker; Millman (any industry): 3-4 years  
Candy maker (confection): 3-4 years  
Canvas worker (any industry): 3 years  
Carman (locomotive and car building and repairing): 4 years
- Carpenter (any industry): 4 years  
Cement finisher (construction): 3-4 years  
Cook (hotel and restaurant): 3 years  
Cooper (cooperage): 4 years  
Cosmetician; Beauty operator (personal service): 2 years
- Dairyman (dairy products): 2-3 years  
Dental technician (business service): 3-4 years  
Designer (any industry): 5 years  
Draftsman (any industry): 3-4 years  
Dry cleaner, spotter, and presser (cleaning, dyeing, and pressing): 3-4 years
- Electrician (any industry): 3-5 years  
Electroplater (any industry): 3-4 years  
Electrotyper (printing and publishing): 5-6 years  
Elevator mechanic (construction): 4 years  
Engraver (any industry): 4-5 years

Fabric cutter (any industry): 3-4 years  
 Farm-equipment mechanic (automotive service): 3-4 years  
 Floor coverer (construction): 3-4 years  
 Foundryman (foundry): 2-3-4 years  
 Furrier (fur goods): 3-4 years  
  
 Glass blower; Glass bender (any industry): 3-4 years  
 Glassware worker (any industry): 2-3 years  
 Glazier (any industry): 2-3-4 years  
 Heat treater (heat treating): 4 years  
 Ironworker (any industry): 2-3-4 years  
  
 Jeweler (jewelry): 3-4 years  
 Jig-and-fixture builder (aircraft manufacturing; automobile manufacturing): 4 years  
 Knitter, full fashion (hosiery): 2-3 years  
 Lather (construction): 3-4 years  
 Lead burner (chemical; petroleum and refining; shipbuilding): 4 years  
  
 Leather worker (leather products): 3 years  
 Lithographer; Lithoengraver (printing and publishing): 4-5 years  
 Locomotive repairman (locomotive and car building and repairing): 4 years  
 Machinist (any industry): 4 years  
 Mailer (printing and publishing): 4-5 years  
  
 Maintenance mechanic (any industry): 3-4 years  
 Marking-device maker (marking device; printing and publishing): 2-3 years  
 Mattress maker (mattress): 2-3 years  
 Metal polisher-and-buffer (any industry): 3-4 years  
 Metal spinner (machine shop): 3-4 years  
  
 Miller (grain mill): 4 years  
 Millwright (any industry): 4 years  
 Model maker (any industry): 4 years  
 Motorboat mechanic (any industry): 2-3 years  
 Musical-instrument mechanic (musical instruments): 3-4 years  
 Operating engineer; Hoisting-and-portable engineer (construction): 3-4 years  
  
 Optical technician (optical goods): 4 years  
 Orthopedic technician (surgical appliances): 3-4 years  
 Paint maker (paint and varnish): 3-4 years  
 Painter (any industry): 2-3 years  
 Paper-goods maker (paper goods): 4 years  
 Patternmaker (foundry): 5 years

*(continued on next page)*



## APPRENTICEABLE OCCUPATIONS (continued)

Photoengraver (printing and publishing): 5-6 years

Photographer (any industry): 3 years

Plasterer (construction): 4 years

Plate printer (printing and publishing): 4 years

Plumber; Pipe fitter (any industry): 4-5 years

Pottery worker (pottery and porcelain): 3 years

Printer; Compositor (printing and publishing): 5-6 years

Printing pressman (printing and publishing): 4-5 years

Repairman (any industry): 3-4 years

Rigger (any industry): 2-3 years

Roll turner (iron and steel): 4 years

Roofer (construction): 3 years

Rotogravure engraver (printing and publishing): 5-6 years

Sheet-metal worker (any industry): 3-4 years

Ship rigger (shipbuilding): 3-4 years

Sign-and-pictorial painter (any industry): 3-4 years

Silversmith (silverware): 3-4 years

Stained-glass worker (glass products): 4 years

Stationary engineer (any industry): 3-4 years

Stereotyper (printing and publishing): 5-6 years

Stoneworker (stoneworking): 2-3-4 years

Stonemason (construction): 3 years

Stove moulder (stove): 3 years

Tailor (garment): 4 years

Tanner (leather manufacturing): 2-3 years

Telephone worker (telephone and telegraph): 4 years

Terrazzo worker (construction): 3 years

Textile technician; Textile mechanic (textile): 2-4 years

Tile setter (construction): 3 years

Tool-and-die maker (machine shop): 4-5 years

Upholsterer (any industry): 3-4 years

Wallpaper craftsman (wallpaper): 4-5 years

Watchmaker (any industry): 3-4 years

Weaver (textile): 2-3 years

Wire weaver (wirework): 2-3 years

Wood carver (any industry): 4-5 years

**The registration of apprenticeship agreements.** Apprenticeship is legally recognized when a written contract (indenture or agreement) is signed by the employer and the apprentice and duly recorded. Local apprenticeship programs provide for the registration of these individual agreements with the State Apprenticeship Council. This registration safeguards the interests of the apprentices by making a public record of the fact that he is being properly employed and trained in an occupation to become a qualified all-around skilled worker. It provides a permanent record concerning the worker's training. The table on page 116 shows the occupational choices of 233,300 apprentices, registered as of

December 31, 1948. Note that the construction trades were chosen by 83,700, or 36 percent of all apprentices. The remainder of the table should be read in the same manner.

**Progress in apprenticeship.** Progress in the development of the national apprenticeship program from 1941 to 1952 is shown by the table on page 117. As of June 1952 there were registered with the Bureau of Apprenticeship and 27 state apprenticeship councils 62,000 apprenticeship standards. These written descriptions of terms and conditions of employment and training of apprentices were subscribed to by 182,000 establishments employing 156,000 apprentices. As far as numbers are concerned, the greatest opportuni-

### STANDARDS FOR APPRENTICEABLE OCCUPATIONS

1. One which customarily has been learned in a practical way through training on the job
2. One which is clearly identified and commonly recognized throughout the industry
3. One which requires 4000 or more hours of work experience to learn
4. One which requires related instruction to supplement the work experience (144 hours of such instruction during each year of the apprenticeship is usually considered the minimum.)
5. One which is not merely part of an occupation already recognized as apprenticeable by the Federal Committee on Apprenticeship
6. One which involves the development of skill sufficiently broad to be applicable in like occupations throughout an industry, rather than of restricted application to the products of one company
7. One which does not fall in any of the following categories:
  - (a) Selling, retailing, or similar occupations in the distributive field
  - (b) Managerial occupations
  - (c) Clerical occupations
  - (d) Professional or semiprofessional occupations (This designation covers occupations for which entrance requirements customarily include education of college level.)
  - (e) Agricultural occupations (This designation includes those engaged in the growing of crops, fruits, nuts, etc., and the raising of livestock, poultry, etc.)



ties for apprentices are in California, Michigan, New York, Ohio, and Pennsylvania, in which states 40 percent of the skilled workers of the United States are located.

**What is an apprenticeable occupation?** The standards set up by the Federal Committee on Apprenticeship are listed on page 121. An apprenticeable occupation is one which meets these requirements.

Apprenticeship programs in more than a hundred occupations have been established by certain industries and registered with the Bureau of Apprenticeship or a State Apprenticeship Council. Apprenticeable occupations, with their industries, are listed on pages 118-120, and the customary term of apprenticeship in years is indicated with each occupation.

### For Discussion

1. What is apprenticeship?
2. Explain how apprentices are trained in the Federal Government.
3. What is the Bureau of Apprenticeship?
4. Name eight standards of apprenticeship.
5. What are state apprenticeship councils?
6. What are joint committees?
7. What is meant by a "registered apprentice"?
8. Name 10 apprenticeable occupations.
9. How does one enter an apprenticeship program?
10. What type of occupations are not apprenticeable?

### What to Read

*Apprenticeship Credit for Previous Experience.* Bureau of Apprenticeship, U.S. Department of Labor, Washington 25, D.C., 1947. 32 p. (Free)

*Apprenticeship Past and Present; a Story of Apprentice Training in the Skilled Trades Since Colonial Days.* Bureau of Apprenticeship. U.S. Government Printing Office, Washington 25, D.C., 1950. 29 p. (15 cents)

*Looking Ahead by Way of Apprenticeship.* Bureau of Apprenticeship, U.S. Department of Labor, Washington 25, D.C., 1952. 16 p. (Free)

*The National Apprenticeship Program.* Bureau of Apprenticeship,

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern apprenticeable occupations.

### SUBJECT AREA

### OCCUPATIONAL UNITS

#### ART:

Find out about local apprenticeship opportunities, such as designer, engraver, jeweler, photographer, or wallpaper craftsman.

#### BUSINESS:

Why are managerial and clerical occupations not apprenticeable?

#### ENGLISH:

Write a short story of a local boy who became a skilled worker (journeyman) through apprenticeship.

#### HEALTH:

Discuss provisions for health and sanitation in such apprenticeable occupations as barber, baker, butcher, candy maker, cook, cosmetician, and dairyman.

#### HOME ECONOMICS:

What local opportunities are there for apprenticeship as baker, candy maker, cook, beauty operator, knitter, tailor?

#### LANGUAGES:

In your community, what apprenticeable occupations do workers from other countries most often enter?

#### MATHEMATICS:

Make a list of the apprenticeable occupations in skilled trades that require a good knowledge of mathematics and precision measurements.

#### MUSIC:

Find out about apprenticeship for becoming a musical-instrument repairman, piano repairman, or pipe-organ installer.

#### OCCUPATIONS:

What industries depend upon apprenticeship for skilled workers?

#### SCIENCE:

What apprenticeships make use of elementary physics, chemistry, or biology? Why are professional occupations in science not apprenticeable?

#### SHOPWORK:

Discuss the length of apprenticeship required for various skilled trades.

#### SOCIAL STUDIES:

Trace the progress of apprenticeship from the guild system. (Consult any good encyclopedia for information.)



U.S. Department of Labor, Washington 25, D.C. 1953. 31 p. (Free)  
*National Standards for Carpentry Apprenticeship*. Division of Labor  
Standards Bulletin 54. U.S. Government Printing Office, Washing-  
ton 25, D.C., 1942. 7 p. (10 cents)

*Report on Apprentice Training Program of the Tennessee Valley Au-  
thority*. Bureau of Apprenticeship, U.S. Department of Labor, Wash-  
ington 25, D.C., 1947. 67 p. (Free)

## CHAPTER 9 GETTING YOUR FIRST JOB

**G**etting your first job is like venturing on unfamiliar ground. It is necessary to ask the way of persons who have been over the path before. You cannot visualize an unknown situation before you experience it. In the case of an unknown job, for example, you wonder if you can do the work, if you will like the other workers, and if they will like you. Once on the pay roll and at work, however, you know what is required and what to do to keep yourself on the pay roll. You also learn how to advise your friends about getting their first jobs.

**Learning the ropes.** First experiences are always the most troublesome. Without any previous experience, you have only a vague notion of what to expect. When your family took an automobile trip to a new place, everything seemed strange. To help you get to your destination, you probably carried a map and also occasionally asked for directions. On later trips over the same territory you recognized familiar landmarks and learned the route without the aid of a map.

Likewise, in getting their first jobs, young people without experience lean heavily upon the advice of friends and relatives. Because their first jobs are in an unknown territory, they may ask such questions as these: Where do you go to apply for a job? Who hires you? Do you have to take a test? What shall I say?

If you have done part-time work during your school years, you will know more about the ways of employers and the workers. Once employed, you quickly learn the ropes and are in a position to improve your job-finding methods for the next employment.

In getting your first job, or your next job, a few practical suggestions may prove useful if you follow them. It is well to know beforehand that applicants who follow certain simple rules are more likely to get a job after being interviewed.

**Checking yourself.** First interview yourself. Find a quiet spot away from the television, telephone, and family. Then ask yourself: What can I do best? What studies have I liked in school? What are some of my per-



## STEPS IN GETTING



**1. Birth certificate.** If you are under age, you must have a work permit, and in order to get a work permit, a birth certificate must be shown. Birth certificates are obtained at the city Board of Health.



**2. Work permit.** If you are under age, you apply at the Board of Education for a work permit.



**3. Social security card.** At the Federal Building you receive your social security card. Equipped with (1) birth certificate, (2) work permit, and (3) social security card, you are now ready to place an application with the Division of Guidance and Placement in the public schools or with an outside agency or company.

## THE FIRST JOB

### 4. Application blank.

After making out the application form, which is filed in the placement office, you are registered for employment and will be sent out for an employment interview.



### 5. The employment interview.

The prospective employer interviews every applicant and selects those who seem best suited for the work. It is important that the applicant should appear at his or her best in appearance and conduct during the employment interview.



6. On the payroll. As a result of the employment interview, this girl was selected for a job as **telephone operator (1-42)** in a department store.



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sonal traits? What are my leisure-time activities? What casual work experience have I had? Would I rather work with people, with tools, or with things? Do I like selling? What preparation have I had that is worth money to an employer?

Put down on paper some of the things that you can do. Probably, like everyone else, you have so many interests that it seems difficult to list those that have employment value. If you are a boy, you may be a good "fixer" around home. You may know

### ENTRY OCCUPATIONS INDICATED BY SPECIAL

<i>Major Occupational Groups (Entry Occupations)</i>	<i>Special Interests and Capacity to Learn the Necessary Knowledges and Skills Involved</i>
<b>Professional, technical, and managerial work</b>	Artistic creation, entertainment, social service work, teaching, scientific study, research, engineering, law, medicine, business
Artistic work	Drawing, shaping, arranging
Musical work	Vocal, instrumental, and creative music
Literary work	Creative writing, translating, copy writing, journalism
Entertainment work	Oral and rhythmic
Public service work	Instructive, social service, protective
Technical work	Laboratory science, business relations, geographical engineering and related work, drafting and related work
Managerial work	Personal service, geographical, and industrial
<b>Clerical and sales work</b>	Recording, transcribing, composing, transmitting, systematizing records, computing, compiling data, dealing with the public, giving information, performing commercial services
Computing work	Arithmetic, mathematics, statistics
Recording work	General typing, stenography, checking, routine work
General clerical work	Classifying, machine operating, routine work
Public contact work	General selling, customer service
<b>Service work</b>	Ministering to the needs of others in preparing food, serving meals, and caring for children
Cooking	Domestic cooking and quantity cooking
Child care	Care and amusement of children
Personal service	Food serving, adult care and services

*Note:* This table is adapted from the *Dictionary of Occupational Titles*, Part IV.

how to repair a doorbell, a vacuum cleaner, or a leaky faucet. Perhaps you can change tires or build a model. If you are a girl, you may be able to can tomatoes, trim hats, or make your own clothes. All of these things are related to jobs.

However, don't put yourself down as a Jack-of-all-trades. Jack doesn't find the best opportunities, although he may make a fine handyman. He makes no effort to put his best foot forward in selling his services to an employer. In seeking a job, Jack

## INTERESTS AND CAPACITY FOR LEARNING

<i>Major Occupational Groups (Entry Occupations)</i>	<i>Special Interests and Capacity to Learn the Necessary Knowledges and Skills Involved</i>
<b>Agricultural, marine, and forestry work</b>	Raising and harvesting of crops; breeding, caring for, catching, and hunting fish and other animals; handling boats; preservation of forests; gathering forest products; and outdoor activities
Farming Marine work Forestry work	General farming, crop farming, animal care Hunting, trapping, navigation, fishery Hunting, trapping, preservation, logging, forest products
<b>Mechanical work (trade learners)</b>	Work in which the independent judgment of the worker determines the machine and manual operations to be performed in obtaining the proper form, quality, and quantity of material to be produced. Lay-out work, estimating quantity, making precise measurements, reading blueprints, controlling processes.
Machine trades	Machining, mechanical repairing, complex machine operating
Crafts	Electrical repairing, structural crafts, bench crafts, graphic art work, processing materials
<b>Manual work</b>	Operating machines, using hand tools, observing the operation of machines, feeding machines, performing repetitive and physical tasks
Observational work	Structural-equipment tending, inspecting and testing, machine tending, processing-equipment tending
Manipulative work	Structural work (metal, wood, stone, glass, plastics), welding, riveting, excavating, mining, grading, bench work, machine operating, processing
Elemental work	Light, medium, or heavy physical tasks



says, "I can do anything." To an employer this means that Jack has no particular interest or skill of value, but merely wants a job. If you have many interests and are not willing to be only a handyman, then name some work that you like to do—work that you believe you can do well.

You may have in mind working for some local business or industry when you finish school. If so, list the firms and find out what jobs they have that you could enter. Then check yourself as to your interests in these beginning jobs. What school subjects have you taken that may help you for such work? What are the chances for promotion, and what skills are necessary for advancement? Do you need further training?

In listing your interests, qualifications, and skills, check with the summary of entry occupations, indicated by special interests and capacity for learning, listed on pages 128 and 129. These fields of work cover at least 6000 occupations. Your interests and qualifications lie in one or more of these areas.

#### **Entry occupations (beginning jobs).**

As explained in the chapter on hobbies, the State Employment Service uses the term "entry occupations" to refer to fields of work entered by young people who lack real work experience or skills. Such beginning jobs are for persons who must find employment, even though they do not now have experience or full preparation for the work.

In selecting persons for beginning

jobs, employers consider a number of factors—such as personal traits, leisure-time activities, casual work experience, school records, training courses, interests, aptitudes, and recommendations of friends. They also give due regard to physical characteristics of the applicant, his willingness to work, and the extent and quality of his training.

Opportunities for workers in the entry occupations vary according to the times. When there is a shortage of labor, opportunities are plentiful; but when there is considerable unemployment, opportunities are scarce. Normally, there are many opportunities among entry occupations for young people to be trained on the job. Training courses in school also exist that enable entry applicants to substitute considerable training instead of experience.

In deciding on the type of employment you would like, consult Part IV of the *Dictionary of Occupational Titles* and the table on pages 128 and 129 of this book. Consider your interests and capacities, but bear in mind that no single factor should determine your choice. Your strongest combination of occupationally significant factors makes up your qualifications for beginning work suited to your individual personality. Finally, select the major occupational group where you find that most of your qualifications lie. This is a tentative choice, and you must consider the long list of occupations within that field of work.



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The State Employment Service is a government agency for placing people who are receiving unemployment insurance under the Social Security Act. If people are qualified for the jobs offered them, they are required to take the jobs or they cannot continue to collect unemployment insurance.

**Where to start.** In getting your first job, don't go too far afield, but start within familiar surroundings among friends and acquaintances. In order to live at home, most young people seek a job with a company that is within commuting distance from their homes.

Your relatives and friends will help you find work. More first jobs are obtained in this way than by any other means. It is perfectly all right to let your friends and the friends of your family know that you are looking for employment. You shouldn't depend upon them, but they are likely to hear of openings where they work or find an opportunity for you if they know you to be a sincere

person. You gain little by trying to be independent and "on your own" in finding your first job. Let your friends help you by giving you leads, introductions, and recommendations. Often it is the third party who, knowing both you and the employer, is able to clinch the job for you.

Letting your friends help you is not the same as "pull." Pull is having an influential friend call an employer whom he knows and urging: "Do me a favor and give John a job. I'll do as much for you sometime." This is an unfair procedure, not only to the employer but also to you. You come in under a handicap and you may be given a job of no consequence. Also, no matter how much



pull you have in getting a job, you will have to be able to do the work involved to hold it.

In your own school you will find a placement service, counselor, or teacher that knows about local opportunities. Schools generally cooperate with the State Employment Service. Local firms frequently notify the school that they have openings for a certain number of new workers. For first jobs you will find no better agency than your own school, especially if it is one of the many which makes a special attempt to place its students in local industries and businesses.

A large concern or plant leaves the selection of new workers to its employment managers, office managers, or department heads; or it may even call on the public employment service to send workers. You will find leads to local employment opportunities through newspaper advertisements, employment counselors, and workers in industrial plants. Generally you can apply at the personnel department of a large company without calling for an appointment, but you may have to wait to see the personnel manager or his representative.

Many persons find local jobs by other means. Private employment agencies place adults in special types of work, but beginners with no experience may expect little help from the private agencies. Your newspaper publishes many job opportunities in the want-ad section. Employers ad-

vertise for workers under the "Help Wanted" column. Those seeking employment, like yourself, place ads in the "Situations Wanted" column, but most young people without experience use other means of finding work. You may write letters of application to certain firms that you believe might have openings for beginners. Many business houses put "Help Wanted" signs in their store windows, and applicants for work are requested to "apply inside" at the office. The telephone is seldom used in applying for work other than for locating jobs or for making appointments.

**Letters of application.** Some job hunters send out many letters of application asking employers for interviews and consideration for jobs. The right kind of letter often brings results. It is well to remember, however, that the chief purpose of your letter is to gain an interview with the employer, as he will not hire you "sight unseen." When answering an ad, be very sure to reply to all questions asked.

Whether you write by hand or on a typewriter, follow the accepted rules of a good business letter. Try starting the sentences with "you" instead of "I," in order to catch the employer's interest. Make your letter business-like and brief. Busy executives have little time to read long letters of application.

In your English class you will learn how to write a letter of application for a job. Every person has his

own style of writing. Your letter must come from you naturally. In your own words ask for an appointment so that you may discuss with the employer your qualifications for the job. Your nearest librarian will also help you to find books that suggest both form and content of a good business letter. Do not copy any letter. An experienced employer will easily recognize letters that are copied from books.

You should enclose with your letter a separate sheet of your qualifications in outline form for quick reading. Whether you are writing for an interview only, or whether you are applying for a specific job, this outline of qualifications should be enclosed with a brief letter of application. It is important that you make

out this statement of qualifications carefully and preserve a file copy for your use in the future. Each year you should add further qualifications and keep the outline up to date for use when opportunities arise. Put into the statement everything that will contribute toward showing an employer that you are able to handle the work you apply for.

To help you decide on some of the items to include in your outline, consider the items listed below, which were selected from an "Employee Record" of a large department store. Such stores require their workers to state their qualifications on an employee record blank which is kept in the personnel office files.

As an example of what your statement of qualifications might look

### **EMPLOYEE RECORD**

(Selected items)

#### **Personal information:**

- Your name, address, and phone number
- Your social security number (if any)
- Date and place of your birth
- Your height and weight

#### **Educational information:**

- Last year of school completed
- Name and address of last school attended
- School you are now attending and courses you are taking
- Any special hobbies, talents, or interests

#### **Experience information:**

- List previous jobs, showing for each: name of employer, kind of work, how long you worked there, and why you left

#### **References:**

- Names and addresses of: Personal references
- Former employers



like, examine the sample outline shown below.

**Selling your services.** Your services in the labor market have a definite money value. The value increases or decreases according to the usefulness of your services to the employer. You must convince him that you have what the job requires and that you will be an asset to his business if he employs you.

Getting your first job means selling your services. In a sense, everyone is a salesman. When you apply for a job, you must be prepared to sell your own services if you want to

be a step ahead of all other applicants.

When any new product is put on the market, the advertising carries a sales appeal that makes you want the product. Think of your services as a new product that you are selling. How can you convince the employer that he needs your services?

Whether you are writing a letter of application or having a personal interview, avoid the self-centered approach: "*I want a job.*" "*I need work.*" "*I have dependents to support.*" "*I need money.*" No employer is interested in this approach. Any

### AN OUTLINE OF QUALIFICATIONS TO ACCOMPANY A LETTER OF APPLICATION

#### Personal data:

John Q. Doe, 123 Main Street, Central City 4, Ohio

Phone: Ex-1234

Social Security Number 234-56-7890

Age 18; single

Birthplace: Central City, Ohio

Height: 5 feet 11 inches

Weight: 170 pounds

Health: Excellent

#### Education:

Attended the public schools of Central City, Ohio. Finished twelfth grade and was graduated from Central City High School in June, 19—. My best marks were in mathematics. I played the drums in the school band, and my hobby is building radios.

#### Experience:

For the past two years I have worked on Saturdays and during vacations in the Pig and Whistle Grocery Store, 200 Main Street, Central City, Ohio, at 75 cents an hour.

#### References:

Mr. E. D. Fogg, Manager, Pig and Whistle Grocery Store, 200 Main Street, Central City, Ohio.

Mr. Charles D. Beaumont, Principal, Central City High School, Central City, Ohio.

[Note: References are important; but be sure to ask your friends if you may use their names as references before you do so. Also, it is a good idea to furnish them with any necessary information about you, such as age, schooling, etc.]

employer wants a good worker who will follow instructions and do efficient work regardless of his personal needs or dependents. Rather, emphasize what you can do for him: "You want someone who is willing to work." "You will find that I can do a lot of real work." "Many of my classmates are giving you good service."

Before any interview, convince yourself that you are a good worker. Think what you can do for an employer. Get his point of view, and line up several reasons why you should be successful on the job. Be sincere about selling your services.

**The appointment.** Don't go cold or unannounced for an interview. Plan your campaign. Find out the employer's name, address, and telephone number. Have a friend tell him about you and your qualifications. He will remember your name. Write him a carefully worded letter asking for an appointment, or make an appointment by telephone.

On the day of your appointment be sure that your general appearance will make a good first impression. An experienced employer will size you up when he first sees you. Dress appropriately for the job, whether in overalls or white collar. Employers expect brushed hair, clean hands and nails, clean linen, pressed clothes, and clean shoes. A liberal use of soap and water and ordinary care of wearing apparel is all that is necessary to be well groomed for an interview. A carpen-

ter should look clean and ready to pick up the tools of his trade. An office girl needs to watch her appearance and dress because her duties require her to work closely with other people. She should wear conservative clothes, little jewelry, present a neat but not too dressy appearance, and not apply too much make-up. Applicants for professional work must look immaculate but not elegant. Don't chew gum, don't smoke, and don't fidget. Be courteous to the employees in the outer office because they may be able to help you.

If you are notified to see Mr. Blank at 2:15 P.M., be there a little ahead of time, even though you have to wait after you arrive. Have any letters of introduction or recommendation where you can get at them quickly without fumbling. If you feel nervous, it may be the result of short breathing. Taking a number of long breaths may help you to overcome your nervousness. Be poised and ready when the receptionist says, "Mr. Blank will see you now."

**The interview.** When you meet the employer, call him by name and say, "Mr. Blank, I am John Doe." Omit handshaking unless he offers his hand. If you have an appointment, he will know the nature of your business. Remain standing if he does not offer you a seat, as the interview will not last long. If he indicates a chair, sit down but don't slouch. Act alert, attentive, interested, and ready to work. Simply say, "I came to see you about a job as stock boy in your





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The application blank is an important paper in applying for any job. An applicant should read all the questions on the blank and then answer each question carefully. Careless answers may cost him his job.

shoe department." At least be definite about the type of job you are after. He will probably put you at ease and ask several leading questions, which you should answer frankly and fully. Don't be timid. He may do most of the talking, or he may prefer to listen, depending upon the type of person he is or his mood at the moment. But let him do the talking if he prefers it that way. In other words, don't try to force yourself or your ideas on him unless he asks for them or there

seems to be an opportunity for it. Never contradict or argue with an employer when applying for a job.

Remember you are selling your services and he is the buyer. He doesn't care how badly you need a job; his first concern is to add another worker to his staff who will fill a necessary opening. If you meet his requirements, the job is yours. Take your cues from his questions.

If he tells you that there is no job now open for you, thank him for his time and suggest that you would be

interested if there is an opening in the future. On the other hand, he may consider your application favorably and ask you to fill out an application blank for his files.

There are other methods of interviewing and selecting persons for jobs. Large department stores provide an employment office with a large waiting room and booths where several interviewers talk with the job seekers. In one well-known store the interviewer rates the applicant as he talks. The rating, given in code and confidential, is based on first impressions. The interviewer attempts to rate the person "high," "good," "fair," or "poor" on each of these five points: (1) appearance or general impression; (2) personality; (3) age and physical ability; (4) education, experience, and background; and (5) speech, voice, diction, and use of English. On the same blank are two spaces: (1) "Hired for \_\_\_\_\_ department" and (2) "Not hired. Reason: \_\_\_\_\_."

**The application blank.** Most firms require you to fill out an application blank either when you apply for a job or when you are hired. The way you fill in the blank is often a measure of whether you get the job or not. Read all the questions on the blank to understand what is wanted. Then read and answer each question carefully and thoughtfully. Careless answers may cost you the job.

Applicants are often directed to print their answers because some

handwriting is difficult to read. Take extra care with writing your name and address. If you live out of town, it is sometimes necessary to give the address and phone number of a local friend who will relay messages. Such an arrangement must be made beforehand, however. Many applicants have lost jobs because employer's messages have not been forwarded.

Most application blanks are in four parts: (1) personal data, (2) education, (3) experience, and (4) references.

The personal data may vary with the type of the job, but generally includes questions on where you live and whether or not you live at home; your age, nationality, height, and weight; your marital status and number of dependents; your father's name, birthplace, and occupation; how many brothers and sisters you have; whether you drive a car; when you can start work; state of your health; any defects of eyes or ears; and similar personal items.

To show your education, most application blanks direct you to "circle the highest grade of school completed: 1 2 3 4 5 6 7 8 9 10 11 12." If you were graduated from high school, you would make a circle around the figure "12." Adequate space is also allowed for you to show any further education in college, technical school, or private school. Sometimes you may be asked to indicate the studies you liked or disliked, any honors received, athletic activities, hobbies, etc.



# SAMPLE APPLICATION BLANK

DATE		SOCIAL SECURITY NUMBER	
PRINT NAME IN FULL (Last)			
PRESENT ADDRESS (No. & Street)		(First)	(Middle)
PHONE NUMBER		(City)	(Zone) (State)
PREVIOUS ADDRESS		PROOF OF AGE	
DRAFT OR MILITARY STATUS		UNION NUMBER	
DATE OF BIRTH (Mo.) (Day) (Year)		(Age)	
<div> <div>N</div> <div>e</div> <div>w</div> </div> <div> <div>A</div> <div>d</div> <div>d</div> </div> <div> <div>T</div> <div>r</div> <div>e</div> </div> <div> <div>E</div> <div>s</div> </div>		<div>P</div> <div>H</div> <div>O</div> <div>N</div> <div>E</div> <div>N</div> <div>O</div>	<div>Own</div> <div>Near</div> <div>Own</div> <div>Near</div> <div>Own</div> <div>Near</div> <div>Own</div> <div>Near</div>
DATE OF BIRTH		DATE OF 1st PAPERS	FINAL PAPERS
FATHER'S NAME		LIVING	DECEASED
MOTHER'S NAME		LIVING	DECEASED
SINGLE	OWN HOME	HAS HAD TRAINING IN OPERATING OFFICE MACHINES & SYSTEMS AS FOLLOWS	
MARRIED	RENT	No. of Dep. Children Under 18	No. of Dep. Parents
WIDOWED	RENT ROOM	No. of Dep. Relatives	No. of Dep. Relatives
DIVORCED	BOARD	Weight	Height
SEPARATED	LIVE WITH PARENTS	Hair	Eyes
WERE YOU EVER EMPLOYED BY THIS COMPANY? (In What Dept.?)			

NOTIFY IN CASE OF ACCIDENT NAME		WHOM DO YOU KNOW IN OUR EMPLOY? (Name) (Dept.)		(Relation)	
(Relation)		(Phone)			
(No. & Street)		(City)			
AT WHOSE SUGGESTION DID YOU APPLY?					
FROM		TO			
Mo.		Year		Mo. Year	
EMPLOYER'S BUSINESS					
IF MARRIED SINCE GIVE MAIDEN NAME					
WHAT DID YOU DO?		REFERENCE CHECKED		OUT RET'D	
WHY DID YOU LEAVE?					
PREVIOUS EMPLOYER		FROM		TO	
		Mo.		Year Mo. Year	
EMPLOYER'S BUSINESS					
IF MARRIED SINCE GIVE MAIDEN NAME					
WHAT DID YOU DO?		REFERENCE CHECKED		OUT RET'D	
WHY DID YOU LEAVE?					
PERSONAL REFERENCES—NOT RELATIVES OR FORMER EMPLOYERS					
1 (Name)		(Address)		REFERENCE CHECKED OUT RET'D	
2 (Name)		(Address)		REFERENCE CHECKED OUT RET'D	
GRADE SCHOOL 1 2 3 4 5 6 7 8 (Name)		HIGH 1 2 3 4 (Name)		COLLEGE 1 2 3 4 (Name) (Degree)	
OTHER EDUCATION OR TRAINING				MEMBER HOSP.	



For information on your experience, application blanks direct you to "explain clearly the principal tasks which you performed in each position listed." For example, if you have worked Saturdays in a department store as a sales clerk, you should explain your duties, even though you may think that "sales clerk" is explanation enough. Did you sell handkerchiefs? Did you actually wait on trade, make change, and charge goods? Remember that your prospective employer will not know what you did unless you tell him.

Finally you are requested to give two or three references. Choose these persons thoughtfully, and tell each one that you have mentioned his name as a reference. If possible, you should make a copy of your application blank to keep in your personal job file at home. During your lifetime you will probably make out different applications, and the data and information on each should match for many of the items.

In addition to the application blank, you may be given a simple test of some kind. You have probably taken such tests in school and know in general what to expect. You make no preparation for such tests but follow instructions attentively and quickly. Such tests are seldom difficult but require alertness. For example, a typist may be required to take a typing test to determine her speed and accuracy. Other tests may cover aptitudes, and certain record sheets

concern preferences and personality. Treat the questions in these tests as little puzzles to be solved as quickly as possible.

**Offer of a job.** Finally you may be offered the job. During the interview you learned about the work, but perhaps the subject of wages was not mentioned. Or perhaps, on your application blank, you were directed to indicate "the lowest entrance salary" you will accept. The subject of wages is usually reserved for final agreement. You must be prepared to interpret the amount of wages offered, whether they are stated by the hour, the day, the week, the month, or the year. For example, suppose you want \$35 per week, would you accept 50 cents an hour? Would you accept \$1680 a year? You have to decide quickly, or else make a mistake and be unhappy about your salary when you figure it out. If you have figured pay rates before the interview, you can make quick mental comparisons on the spot. Or you may wish to "think it over" before accepting the job. The employer will probably agree to this unless he is pressed for time and needs a worker immediately. Within a day's time you should have plenty of opportunity to talk the wage question over with your parents and friends and notify the employer of your decision.

Salary is an important factor in getting a job, but it is by no means the only consideration. There are factors of experience to be gained,

skills to be attained, satisfaction on the job, and happiness in the work.

**Holding the job.** Some persons find it harder to find a job than to hold one, and others believe that it is easier. So much depends upon the individual and his aim in life. Studies show that the reasons why people lose their jobs are largely those of poor character traits rather than lack of necessary skill. Carelessness, lack of cooperation, and laziness are reasons high on the list. Absence, dishonesty, too many outside activities, and lack of initiative and ambition are other causes. (See Chapter 1.)

Those with the right attitude toward their work get along the best. The right attitude consists of (1) taking pride in your work; (2) getting along cheerfully with the other workers; (3) being sincere and natural on the job; (4) telling the truth at all times; (5) listening carefully to directions and carrying them out; (6) planning your work; (7) not wasting company time or materials; (8) working quietly without disturbing others; (9) following company rules and regulations as to hours and time off; and (10) doing a little more than the minimum required.

### For Discussion

1. Why is the first experience in getting a job the most troublesome?
2. Explain the expression: "A Jack-of-all-trades is master of none."
3. As used by the State Employment Service, what does the term "entry occupations" mean?
4. In selecting entry applicants, what factors do employers consider?
5. Explain the statement: "Everyone is a salesman."
6. How does one go about getting a first job?
7. Name some good rules to follow in writing a letter of application.
8. How should you prepare for an appointment about a job?
9. Suggest some good pointers for a young person to observe during an employment interview.
10. How can you make your application blank stand out among hundreds received by an employer?
11. What factors besides salary contribute to satisfaction on a job?
12. Obtain a few application blanks from local department stores and industries. Bring these to class and fill them out and discuss them.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern getting a job.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Prepare a portfolio of your best art work to show any prospective employer as evidence of your skill in art work.
<b>BUSINESS:</b>	Discuss ways and means of finding desirable office work in your town.
<b>ENGLISH:</b>	Write a letter of application for a job. Have the class criticize the letters and select those that are best.
<b>HEALTH:</b>	Discuss local employment requirements for teen-age boys and girls who are seeking work—legal age, hours of work, and physical requirements.
<b>HOME ECONOMICS:</b>	What advice would you give boys and girls concerning their clothes and appearance when they are seeking employment?
<b>LANGUAGES:</b>	What job opportunities in foreign trade are open to young people?
<b>MATHEMATICS:</b>	For quick comparison of salary when offered a job, figure the salary you hope to get per year, per month, per week, per day, and per hour.
<b>MUSIC:</b>	As evidence of your ability when seeking employment in the musical field, prepare a repertoire of musical selections that you play or sing well.
<b>OCCUPATIONS:</b>	In seeking a job in your community, what agencies and individuals would you consult and why?
<b>SCIENCE:</b>	What jobs might a high school graduate be offered as a beginner in a laboratory?
<b>SHOPWORK:</b>	How does a skilled worker find employment in his trade?
<b>SOCIAL STUDIES:</b>	What first jobs might be open to a young person finishing training to be an economist, employment interviewer, insurance agent, counselor, politician, psychologist, or social worker? Report on the first jobs of famous persons or the first jobs of last year's graduates of your school.

**What to Read**

*Guide to Career Success*, Esther Eberstadt Brooke. Harper & Brothers, New York, 1947. 228 p.

*How to Get the Job*, Mitchell Dreese. Science Research Associates, Chicago, 1949. 48 p.

*How You Can Get a Better Job*, W. K. Lasher and E. A. Richards. American Technical Society, Chicago, 1948. 221 p.

*Job Horizons, a Study of Job Satisfaction and Labor Mobility*, Lloyd G. Reynolds and Joseph Shister. Harper & Brothers, New York, 1949. 102 p.

*Six Ways to Get a Job*, Paul Boynton. Harper & Brothers, New York, 1945. 147 p.

*So You Want a Better Job*, Paul Boynton. Socony-Vacuum Oil Company, 26 Broadway, New York 4, 1949. 24 p. (Free)

*Your Job—A Guide to Opportunity and Security*, Fritz Kaufmann. Harper & Brothers, New York, 1948. 194 p.



# CHAPTER IO

## HOW TO STUDY OCCUPATIONS

**W**hat do you need to know about occupations and paid work? What should you know about job opportunities in the labor market? How do your present school subjects help fit you to earn a living? Where will you turn to find a job after leaving school? These and similar questions need to be answered in an occupations class.

**Why study occupations?** Most students live at home while going to school. Home is man's castle—a place of security, safe from the outside world. School and college likewise shelter students from the workaday world where men and women compete to earn a living in the labor market. Schools seldom explain to young people how the various courses of study actually fit them for employment. Even though students work at vacation jobs to earn money, their knowledge of the many opportunities for employment is extremely limited. After a time, school is finished, you have become old enough to be self-supporting, and you face the necessity of making a living. The more you know about yourself, the fields of occupations, and the methods of preparing for work, the easier it will

be for you to find an occupation and make a satisfactory adjustment on the job. You will find that it pays to make occupational plans for the future.

The study of occupations in school offers a means of planning for work before actually entering employment. Among the many reasons for such planning the following stand out:

*To be a good citizen in the United States, you should have some work to do. Every good citizen in this country works for a living. A man with any self-respect must earn money to support himself and his dependents. American homes were founded on this premise. A woman may or may not earn money through paid employment, depending upon her financial circumstances, marriage, dependents, and other factors. The majority of women are employed as homemakers without pay, yet they perform many duties at home and in the community which would bring in a good income in the labor market. Any woman has additional security when she knows how to do some particular kind of paid work.*

*To make the right choice of an oc-*

cupation, you must know something about all fields of work. Choices can only be made by comparison. The study of occupations helps in comparing several different fields of interest. In order to make comparisons, it is necessary to study occupations in a uniform manner—that is, to find out the same kind of information about each type of work.

*To make an interesting choice of new opportunities*, you must understand the direction that new occupations are taking. In our highly complex society so many new and different occupations have been created in recent years that a person cannot rely on chance to learn about highly specialized jobs. There may be many interesting new occupations that you would like but have never even heard of. A study of occupations will reveal many opportunities for challenging employment. When you make your choice, however, will depend largely upon your maturity at the time, your financial need, your preparation, and other factors.

*To make an interesting choice of work*, you must understand your own interests. In an occupations class you will study individual interests as related to work. Such study is done for the purpose of finding out what field of work or kinds of jobs a person is fitted for according to his interests, aptitudes, personality, and temperament. Finding an occupation that is suited to you as a person is a large factor in your enjoying a happy life. Many people prepare for an occupa-

tion and find out too late that they have no liking for it.

*To learn the nature of the preparation needed for entrance to different occupations*, you need to make a systematic study of occupations. Although the public is aware of many occupations, few persons know what preparation is needed even for well-known jobs. The average home owner, for example, who employs carpenters and plumbers would probably be unable to tell a young man how to prepare for these jobs.

*To learn which jobs are always available that may be used as stepping stones to other work*, you should know about all the occupational groups. Jobs in the unskilled field are an example. Many workers begin with unskilled work in a certain industry to learn the business from the bottom up. There are always openings for unskilled workers because the turn-over among these workers is large. Some girls who wish to enter advertising or personnel work get jobs as typists in advertising agencies or in personnel departments. Such girls are in their chosen field of work and are ready for promotion when opportunity offers.

*To learn about local opportunities for employment*, you should study the work of the community. Community occupations and industries furnish many workers a means of earning a living without leaving home. A lack of knowledge about jobs available in the community often drives people to seek work in





COURTESY NATIONAL INSTITUTE OF HEALTH

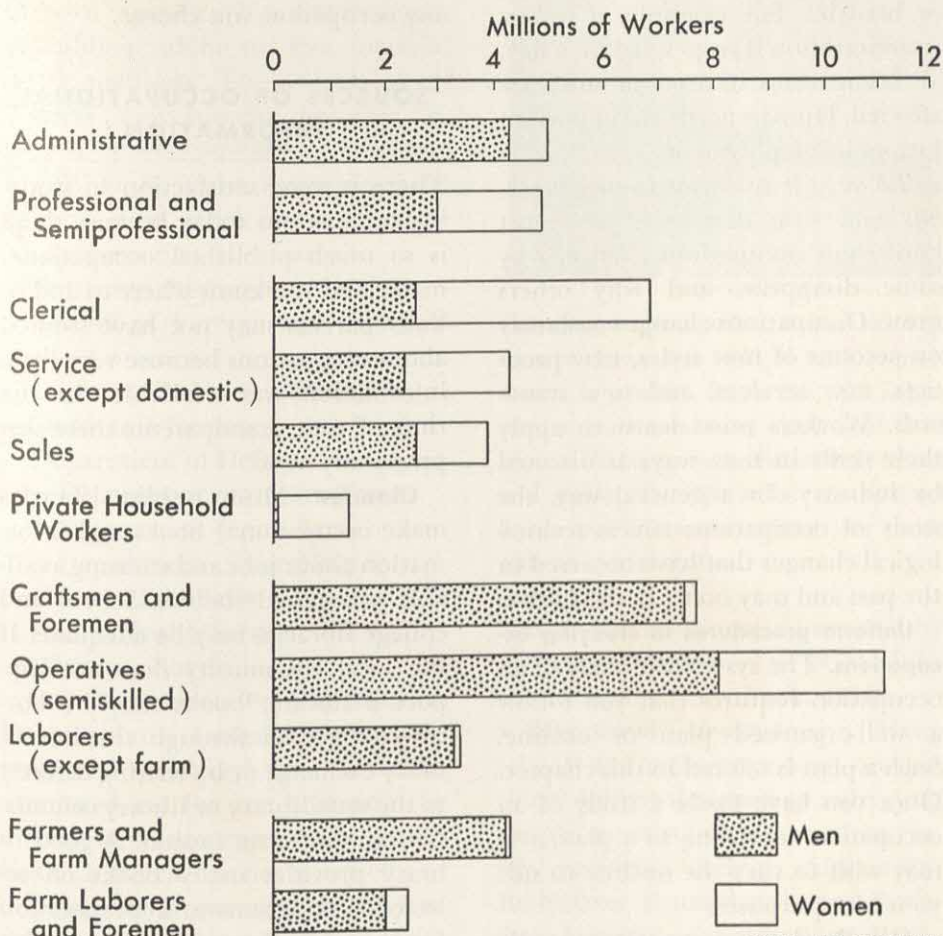
Most people are not aware of what is involved in many kinds of occupations. For instance, one of the things that a **biochemist (0-07)** and his **scientific helper (0-50)** have to know how to do is to check the weight of white rats to find out, for example, how nutrition affects the rate of growth. The biochemist, who specializes in the chemistry of living organisms to determine the reaction of foods and other substances upon them, must have had college training in order to qualify for this work.

other places where opportunities are no better than those at home.

To recognize the practical value of an adequate education before entering employment, you should study the biographies of successful workers and make follow-up studies of former students. Boys and girls who en-

ter the labor market before finishing school may find a new independence for a short time. When it is too late, they often find that they need more preparation than they have to advance to better opportunities. Once out of school and employed on a regular job, a worker finds little time for

### MAJOR OCCUPATION GROUPS



These are the areas in which men and women earn a living. Note that the largest number of men are semiskilled operatives, and the largest number of women are in clerical occupations.



training except in the evening when he would rather relax than study.

*To learn how your future job will depend upon other occupations*, you should study the work of others and how occupations are dependent on each other for survival. Occupations serve the demands of people, whether the demands are for bare necessities, conveniences, cultural activities, or luxuries. For example, if public transportation is suspended for a day, all occupations in a community are affected. Human needs are important factors in employment.

*To be able to adjust to new methods and new demands*, you must know how occupations change, why some disappear, and why others grow. Occupations change constantly on account of new styles, new products, new services, and new standards. Workers must learn to apply their skills in new ways as directed by industry. In a general way, the study of occupations covers technological changes that have occurred in the past and may occur in the future.

**Uniform procedures in studying occupations.** The systematic study of an occupation requires that you follow a well-organized plan or outline. Such a plan is offered in this chapter. Once you have made a study of an occupation according to a plan, you may wish to vary the outline to suit your own purposes.

Handbooks on occupations usually follow the same outline throughout the chapters because such books are used for reference only when readers

desire to find information quickly. On the other hand, a textbook on occupations would be dull and uninteresting if all the chapters followed a rigid outline. Study in an occupations class is designed to stimulate interest, develop reasoning power, give you a broad view of many fields of work, and help reveal sources of information so that you may study any occupation you choose.

### SOURCES OF OCCUPATIONAL INFORMATION

There is some satisfaction in studying occupations today because there is so much published occupational material if you know where to find it. Your parents may not have studied about occupations because very little information was available. In the time of your grandparents there was practically none.

**Libraries.** Most public libraries make occupational books and information about jobs and training available on special shelves. School and college libraries may be adequate. If the local community does not support a library, books may be borrowed by mail through the interlibrary exchange or by writing directly to the state library or library commission at your state capital. A good library provides many books on selected occupations and preparation for them. Books and articles in this area may be located through volumes on the reference shelves, such as *Readers Guide*, *Career Index*, *Edu-*

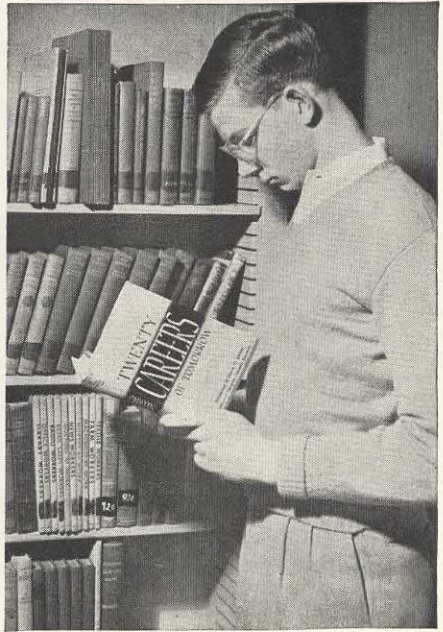
cation Index, Guidance Index, Occupational Index, Current Biography, and other compilations. Directories of schools and colleges are also kept on file.

**Government agencies.** Government departments publish many bulletins on jobs and employment. Some are free, but no more than one representative of your class should write to such agencies for single copies of bibliographies or free material on occupations. The address of all Federal Government agencies is: (name of bureau or department), Washington 25, D. C. These are some of the agencies from which free material on occupations may be obtained:

- Bureau of the Census
- Bureau of Foreign and Domestic Commerce
- Bureau of Labor Statistics
- Children's Bureau
- Department of Defense:
  - Department of the Air Force
  - Department of the Army
  - Department of the Navy
- Office of Education
- Public Health Service
- Women's Bureau

**U. S. Government Printing Office.** A list of printed bulletins on occupations will be mailed free. All bulletins listed are for sale only and the money must accompany the order. C. O. D. orders are not accepted.

**Occupational monographs.** Several private publishers issue various series of job leaflets and pamphlets at small cost. These are described in their current price lists and may be identi-



COURTESY ST. LOUIS PUBLIC SCHOOLS

Selecting an occupation means learning how to choose one field of work in preference to another. To do this, it is necessary to know something about each field of work that is up for a choice. Most school and public libraries make occupational books and information about jobs available on special shelves.

fied in *Occupational Literature* by Gertrude Forrester (The H. W. Wilson Company, New York, 1954).

**Educational institutions.** Many schools and colleges publish occupational leaflets designed to aid young people in selecting occupations, as, for example, Lehigh University, Bethlehem, Pennsylvania, and Rochester Institute of Technology, Rochester, New York.

**Industry.** Public relations departments of well-known industrial con-





COURTESY SIERRA (CALIF.) UNION HIGH SCHOOL

Some schools have special guidance centers where students study about occupations. Here are filed many kinds of occupational materials—books, pamphlets, magazines, leaflets, bulletins, etc.

cerns issue occupational pamphlets and leaflets for young people. These pamphlets and leaflets explain industrial processes as well as the duties of workers.

**Associations.** Professional and trade associations publish descriptive leaflets about occupations in their respective fields of work. Consult *The World Almanac* for the names of such associations. Local chambers of commerce and trade unions also will provide materials and information about jobs.

**Visual aids.** A limited number of occupational motion pictures and filmstrips are available from commercial producers. Those designed for guidance purposes are on file in the film libraries of many communi-

ties and may be borrowed for school use.

**Field trips.** Visits to industries in your own community are often arranged for groups from the occupations class. Although such visits are time-consuming, first-hand occupational information can be obtained in no other way.

**Employment services.** State employment offices welcome visitors seeking job information. Visitors have opportunity to examine occupational files and references and to understand better how placements are made.

**Telephone directory.** The classified section of your telephone directory is a good source of information about occupations and work in your community.

**Occupational file.** Your school should have its own occupational file and invite all students to contribute clippings, pictures, and unbound materials on jobs. In this way occupational information may be preserved and found when wanted.

**Newspapers and magazines.** Your local newspaper publishes good current material about local jobs. Current periodicals and trade journals also publish articles on interesting occupations and trends.

**Dictionary of Occupational Titles.** As a desk reference, every school should provide at least a single copy of the *Dictionary of Occupational Titles*. This *Dictionary*, published in three parts by the U. S. Department of Labor, is available by purchase only through the U. S. Government Printing Office.<sup>1</sup> The 1949 edition of the

<sup>1</sup> Volume I: *Definitions of Titles*, 1949, 1518 p. (\$4.00); Volume II: *Occupational Classification and Industry Index*, 1949, 743 p. (\$2.50); and Part IV: *Entry Occupational Classification*, Oct. 1944, 242 p. (75 cents)

## MAJOR OCCUPATIONAL GROUPS AND DIVISIONS

(According to the *Dictionary of Occupational Titles*)

Code Numbers	Occupational Groups and Divisions
(0)	<b>Professional and managerial occupations</b> 0-00 through 0-30—Professional occupations 0-40 through 0-60—Semiprofessional occupations 0-70 through 0-90—Managerial and official occupations
(1)	<b>Clerical and sales occupations</b> 1-00 through 1-40—Clerical and kindred occupations 1-50 through 1-90—Sales and kindred occupations
(2)	<b>Service occupations</b> 2-00 —Domestic service occupations 2-20 through 2-50—Personal service occupations 2-60 —Protective service occupations 2-80 through 2-90—Building service workers and porters
(3)	<b>Agricultural, fishery, forestry, and kindred occupations</b> 3-00 through 3-40—Agricultural, horticultural, and kindred occupations 3-80 —Fishery occupations 3-90 —Forestry (except logging), and hunting and trapping occupations
(4) and (5)*	<b>Skilled occupations</b>
(6) and (7)*	<b>Semiskilled occupations</b>
(8) and (9)*	<b>Unskilled occupations</b>

\* Two code numbers are assigned because of the great number of occupations included.



*Dictionary* defines 22,028 jobs that are known by more than 40,000 different job titles. This reference book is a reliable source of information about almost any occupation. Occupations are classified and assigned code numbers to identify each job. Anybody can use the *Dictionary* for job information without understanding the classification system or the code numbers. However, the classification system is briefly described in the following section because it furnishes a plan for filing occupational materials and the chapters in Part II of this book follow this classification.

### CLASSIFICATION OF OCCUPATIONS

All occupations in the *Dictionary of Occupational Titles* are classified into the following seven major

groups: (1) professional and managerial, (2) clerical and sales, (3) service, (4) agricultural, (5) skilled, (6) semi-skilled, and (7) unskilled. These major groups are assigned code numbers as indicated in the table on page 151. Each major group is divided into smaller groups with additional code numbers to identify the groups. Each occupation is assigned a code number of five digits. The first digit (number) indicates the major group to which the occupation belongs. The next two digits (numbers) indicate the smaller groups. The final two digits identify the occupation within the group.

Any occupation with a code number between 0-00 and 0-30 is a professional occupation. The code number of a lawyer is 0-22.10. The first three digits (0-22) indicate that a lawyer is a professional worker be-

#### Airplane-and-Engine Mechanic

17

#### Airplane Inspector

**AIRPLANE-AND-ENGINE MECHANIC** (air trans.; aircraft mfg.) *see* AIRPLANE MECHANIC.

**AIRPLANE-CABLE MECHANIC** (aircraft mfg.) *see* WIREWORKER.

**AIRPLANE CAPTAIN** (air trans.) *see under* AIRPLANE PILOT, COMMERCIAL.

**AIRPLANE CLEANER** (air trans.) *see* CLEANER III (any ind.).

**AIRPLANE COVERER** (aircraft mfg.) 5-03.010. **coverer; fabric man; seamstress.** Sews airplane fabric to such parts of airplane structure as wings, ailerons, fuselage, rudders, and elevators. Stretches cloth over part to be covered, and sews it in place with straight or curved needle so that thread passes around structural members. Applies single coat of dope (tautening lacquer) to covering [DOPER; SPRAY MAN (air trans.; aircraft mfg.)] and applies strips of pinked-edge fabric tape over the rows of stitches to protect them. May cut fabric to proper length and sew pieces together to obtain appropriate width, using power sewing machine [FABRIC WORKER I]. May be designated according to part of airplane covered, as CONTROL-SURFACE COVERER; FUSELAGE COVERER; WING COVERER.

next to gas tank. Paints cut sheets with rubber cement and lays another sheet on top of cemented surface, pressing them together. Hangs processed sheets on revolving drums which pass through curing oven.

**AIRPLANE-HEATER MAN** (aircraft mfg.) *see under* PLUMBER, AIRCRAFT.

**AIRPLANE HOSTESS** (air trans.) 2-25.37. **airplane stewardess; stewardess.** Renders a variety of personal services to passengers of an airliner in order to make their trip as pleasant and enjoyable as possible: Greets passengers boarding planes and assigns seats so as to evenly distribute weight load. Fastens passengers' seat belts for take-offs and landings. Distributes reading matter, answers questions about the plane, its schedule, or terrain over which flight passes, and points out places of interest. Observes passengers during flight to detect signs of discomfort, administering minor medical aid as necessary for the relief of such ailments as airsickness, headaches, or insomnia, and engaging nervous passengers in conversation to allay their fears and apprehensions. Serves previously prepared lunches and dinners. Joins passengers in such games as bridge, checkers, and chess. Performs nu-

This is part of a page from the *Dictionary of Occupational Titles*, which contains definitions or descriptions of some 20,000 occupations.

cause the code comes between 0-00 and 0-30.

Likewise the code number for a barber is 2-32.01. The first three digits (2-32) indicate that barbering is classified as a personal service occupation because the code falls between 2-20 and 2-50 in the table. Most occupational literature today includes these code numbers along with the occupational titles. If you file occupational materials by code numbers, you will find that all occupations in each group will fall together. Those who wish to understand the complete coding system and classification system should study the introductory pages of the *Dictionary of Occupa-*

*tional Titles*. Most of the occupations mentioned in this book carry the 3-digit code numbers so that a job may be readily classified in its proper major group.

We would like to find Census figures over the years that would fit the standard classification of occupations as given in the *Dictionary of Occupational Titles*. This is not possible, however, because the *Dictionary* was not issued until 1939. In 1940 the Census reduced its 557 occupational groups of the 1930 Census to 451 and changed the occupational groupings in accord with the *Dictionary*. In order to compare 1940 Census data with those of previous censuses, Dr.

### GAINFUL WORKERS IN THE LABOR FORCE CLASSIFIED INTO SOCIAL-ECONOMIC GROUPS

(According to the U. S. Bureau of the Census)

Group	Percentage of Men			Percentage of Women		
	1930	1940	1950*	1930	1940	1950*
Professional workers (includes semiprofessional)	4	5	7	13	12	12
Proprietors, managers, officials (includes farmers)	24	22	21	5	4	5
Clerical workers (includes salespersons)	13	13	13	29	29	36
Skilled workers (includes service workers)	16	15	19	1	1	2
Semiskilled workers (includes operatives and service workers)	15	19	20	24	29	28
Unskilled workers (includes personal service workers)	28	26	20	28	25	17
Total percentage	100	100	100	100	100	100

**This table should be read as follows:** In 1930, 4 percent of all men workers were professional; 24 percent were proprietors, managers, or officials; etc. Note the differences in opportunities for men and for women in the different occupational groups, and the changes in the proportions of men and women in these groups in different years.

\* Estimated



Alba M. Edwards of the Bureau of the Census adjusted the statistics from 1870 to 1940 and in 1943 published his findings.<sup>2</sup> He showed trends in certain social-economic groups which are similar to but not identical with the major groups of the *Dictionary of Occupational Ti-*

<sup>2</sup>*Population: Comparative Occupation Statistics for the United States, 1870 to 1940* (A comparison of the 1930 and the 1940 Census occupation and industry classifications and statistics; a comparable series of occupation statistics, 1870 to 1930; and a social-economic grouping of the labor force, 1910 to 1940), Alba M. Edwards, U.S. Government Printing Office, Washington 25, D.C., 1943. 206 p. (\$1.80)

*ties*. The table on page 153 summarizes these trends since 1910 for gainful workers in the labor force by sex for the United States.

### STUDYING A SINGLE OCCUPATION

An adequate study of an occupation furnishes information on a series of topics about a job. A topical outline, therefore, helps to make a study flow naturally from one topic to another. Writers have such topics in mind when they describe occupations and opportunities, but they vary the

### NVGA BASIC OUTLINE FOR THE STUDY OF AN OCCUPATION

(Major topics recommended by the National Vocational Guidance Association)<sup>3</sup>

1. History of the occupation
2. Importance of the occupation and its relation to society
3. Duties: definition of the occupation: nature of the work
4. Number of workers engaged in the occupation: number; distribution; trends
5. Qualifications: age; sex; special qualifications; special skills; special tools; scores on tests for employment; legislation affecting occupation
6. Preparation: general education; special training; experience
7. Methods of entering
8. Time required to attain skill
9. Advancement: lines of promotion; opportunity for advancement
10. Related occupations
11. Earnings: beginning wage range; wage range of largest number of workers; maximum wage of highly skilled; median and average salary; annual versus life earnings; regulations; benefits; other rewards
12. Conditions of work: hours; regularity of employment; health and accident hazards
13. Organizations: employees; employers
14. Typical places of employment
15. Advantages and disadvantages not otherwise enumerated
16. Supplementary information: suggested reading; trade and professional journals; visual aids; other sources; list of associations, firms, or individuals who may provide further information.

<sup>3</sup> For complete outline see *Occupations* (now *The Personnel and Guidance Journal*), Feb. 1950, "Standards for Use in Preparing and Evaluating Occupational Literature," p. 319.

topics for different occupations to suit their own purposes. In general, most occupational outlines cover the same territory, even though the topics are not considered in the same order or with the same coverage. Some topics are treated more fully than others because there is more information available.

The National Vocational Guidance Association recommends the basic outline given on page 154 for the study of an occupation.

In the *Occupational Outlook Handbook* (see references at the end of this chapter) the occupational outline adheres closely to the topics listed below.

The study of any occupation means examining many sources systematically, finding out many facts, and recording the information into a logical outline. The outline suggested on pages 156 and 157 will help you to fit most job facts into the different topics. You can then make brief comments under each topic to help clarify the meaning. Not all

items can be filled out for every occupation. In the case of number 5, "Licensing and Certification," for example, many workers are not required to have licenses or certificates to hold their jobs.

As a first project, you might select for study an occupation with which you are more or less familiar—teaching, selling in a department store, or typing in an office. After learning how to find the necessary information for a familiar job and using it in an occupational outline, you learn to use sources to find the information you need about any occupation.

When you have completed your study of an occupation, read it through for content. Does it cover all of the information you would like to know about the work? Do you know additional facts that should be included? Will the study help a young person to know what the worker is required to do on the job? Have you included data on interests and aptitudes for the work? In the light of your previous study of interests, apti-

### **BLS OUTLINE FOR THE STUDY OF AN OCCUPATION**

(As used by the Bureau of Labor Statistics in the *Occupational Outlook Handbook*)

1. Outlook summary (general trends in the occupation)
2. Nature of the work (duties)
3. Where employed (types of placement opportunities)
4. Training and other qualifications
5. How to enter the occupation (employment requirements)
6. Outlook (shortages and oversupply of workers; future opportunities)
7. Working conditions
8. Earnings
9. Where to go for more information (sources)



## SUGGESTED OUTLINE FOR THE STUDY OF AN OCCUPATION

### 1. Definition and code number of the occupation.

Use the definition given in the *Dictionary of Occupational Titles*, but interpret the definition in your own words.

### 2. What does the worker do?

The information given in the *Dictionary of Occupational Titles* describes what workers do generally in the United States. Look up other sources for the same kind of information. Visit local workers to get first-hand information about the tools and machines they use. Explain what products or services result from this occupation.

### 3. U. S. Census data.

Find the most recent data about the number of men and women employed in this occupation. The Bureau of the Census furnishes occupational summaries for states, and for cities of 100,000 population and over. (Condensed information may also be found in *Occupational Data for Counselors* listed in the references at the end of this chapter.) Consult your librarian for Census materials. The local Chamber of Commerce will supply data on local jobs.

### 4. Outlook for this occupation.

A number of sources mentioned in this chapter will help in estimating the supply of workers, the changes likely to be made in the occupation in the future, the chief locations of the work, and the trends expected. (Consult the *Occupational Outlook Handbook*, listed in the references.)

### 5. Licensing and certification.

Does this occupation require workers to be licensed or certified? If so, what are the requirements in your community? Teachers must have teaching certificates. Doctors, barbers, and many skilled workers must obtain licenses to practice. Some occupations require workers to have physical examinations. Many occupations have none of these requirements.

### 6. Geographical location of the work.

Is this occupation open in your community or state? Some jobs, such as cotton farming or coal mining, are open only in certain regions. Others, like stenography and barbering, are available anywhere in the United States, even in small towns.

### 7. Working conditions.

Describe briefly the nature of the place in which the employee works—noisy, quiet, hot, cold, humid, dry, clean, dirty, etc. Note whether the work is seasonal. Are there busy times and dull seasons? Mention the hours of work, amount of night work, work in bad weather, unemployment, health risks, hazards, accident records, safety measures, and similar factors.

Be unbiased in your descriptions and opinions. Avoid labeling factors as "advantageous" or "disadvantageous" because workers on the job would probably not agree with your personal opinions about their work. You might not like work in a

noisy factory, but this would not be a disadvantage to a deaf person. A job is not necessarily advantageous because it is in a clean, warm, cozy office. It is better to name characteristics of the job and let each reader decide for himself whether these factors are advantageous or disadvantageous to him.

#### **8. Pay and promotion.**

Earnings are difficult to estimate unless recent studies of salaries and wages have been made. Employers seldom reveal salaries, except in the range for beginning workers. Beginning wages should, therefore, be expressed in ranges "from \$\_\_\_\_\_ to \$\_\_\_\_\_." Also mention whether the pay includes tips, commissions, and other extras. What are the possibilities for advancement? What experience is necessary for the first promotion?

Avoid meaningless "maximum salaries," such as "A man may earn as much as \$25,000 to \$30,000 a year." In 1952 the U. S. Census showed that the median income of 49 million men and 27 million women was \$2315 per year. "Median" means that half of these individuals earned more and half earned less than \$2315. The median income of men was \$3105 and that of women was \$1147.

#### **9. Requirements for the job.**

Show the requirements as to age. What are the physical requirements concerning good eyesight, good hearing, muscular strength and energy? What are the mental requirements? Do employers use tests of aptitude or ability in selecting workers? What kind of person gets along best in this work? What are the requirements as to skill, initiative, judgment, etc.? What school subjects are desirable? What educational requirements and amount of schooling do employers prefer?

#### **10. Preparation for the job.**

How should a person prepare for this occupation? What school courses are necessary and what are the tuition costs? Can the work be learned through vocational schools, work-experience programs, or apprenticeship? How long is the training program? What hobbies contribute to the preparation? What agencies can give information about training? Make a list of the schools in your state that offer instruction in this work.

#### **11. How is employment found?**

How do applicants for this work get their jobs—by personal application, by examination, through friends, or through employment offices?

#### **12. References for further study.**

List the books and pamphlets that you have used in making this study. List associations and agencies that promote the work and provide information as a public relations service. List the names of local individuals who are likely to help young people with information about this occupation.



tudes, and skills, would you like this job now that you have studied it? Does your study show just how and where to prepare for the occupation? Have you included enough data to help a person select a good school according to his financial circum-

stances? Discuss your study with others in the occupations class and find out how it can be improved. Your first study is a pioneer effort. Your next study of an occupation will be done with more assurance on your part.

### For Discussion

1. Why should every student in school or college study occupations?
2. What is the difference between an occupational *handbook* and an occupational *text*?
3. Name six sources of occupational information that you know about and prefer to use.
4. Name the seven major groups into which the *Dictionary of Occupational Titles* classifies all occupations.
5. How are these major occupational groups subdivided?
6. Make an occupational outline using only six major topics.
7. Why should a girl study occupations that are usually closed to women?
8. Why should a boy study occupations that are usually closed to men?
9. What agencies publish materials useful in studying occupations?
10. Aside from reading books, how can you learn about occupations?
11. Why is the *Dictionary of Occupational Titles* an outstanding contribution to occupational literature?

### What to Read

#### References for Daily Use in the Occupations Classroom

- Dictionary of Occupational Titles*. U.S. Employment Service, U.S. Government Printing Office, Washington 25, D.C.  
 Volume I: *Definitions of Titles*. 1949. 1518 p. (\$4.00)  
 Volume II: *Occupational Classification and Industry Index*. 1949. 743 p. (\$2.50)  
 Part IV: *Entry Occupational Classification*. 1944. 252 p. (75 cents)

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern how to study an occupation.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Explain why drawing, painting, and art training are not standardized as to requirements as other work is. If standardized, would creative work be lessened?
<b>BUSINESS:</b>	Compare wages and working conditions for office work and skilled work.
<b>ENGLISH:</b>	Name five occupations where English is an important requirement and five jobs where it is nonessential.
<b>HEALTH:</b>	What are some of the qualifications common to an athlete, a baseball player, a football player, and a swimmer? Would the same qualifications apply to a coach, a sports writer, or a camp counselor?
<b>HOME ECONOMICS:</b>	Is home economics training in high school aimed mainly at employment or homemaking? What about home economics training in college?
<b>LANGUAGES:</b>	Give one instance in which a knowledge of a foreign language has been a determining factor in the selection of a person for a job.
<b>MATHEMATICS:</b>	Mention three professions and three skilled trades that do not require any ability in mathematics.
<b>MUSIC:</b>	Should students study music in school even though they have no intention of using it in their chosen occupation?
<b>OCCUPATIONS:</b>	Make your own original outline on How to Study an Occupation.
<b>SCIENCE:</b>	Discuss the value of general science in school for appreciation, as an opening wedge for further science, and for household use.
<b>SHOPWORK:</b>	What percentage of high school students in the United States are preparing for occupations through vocational courses?
<b>SOCIAL STUDIES:</b>	Report on the background and development of any one local occupation.



- Handbook of Job Facts*, Alice H. Frankel. Science Research Associates, Chicago, 1948. 160 p.
- Information Please Almanac*, John Kieran, editor. The Macmillan Company, New York (Annually). 900 p.
- Occupational Data for Counselors* (A handbook of Census information selected for use in guidance), W. J. Greenleaf, E. C. Taylor, and H. Goldstein. U.S. Government Printing Office, Washington 25, D.C., 1945. 36 p. (10 cents)
- Occupational Handbook*. Bureau of Navy Personnel, Department of the Navy, Washington 25, D.C. 1949. (Free)
- Occupational Information*, C. L. Shartle. Prentice-Hall, Inc., New York. 1952. 448 p.
- Occupational Information; Its Nature and Use*, Max F. Baer and Edw. C. Roeber. Science Research Associates, Chicago, 1951. 603 p.
- Occupational Outlook Handbook*. Bureau of Labor Statistics Bulletin 998. U.S. Government Printing Office, Washington 25, D.C., 1951. 574 p. (\$3.00)
- Occupations: A Basic Course for Counselors*, Walter J. Greenleaf. U.S. Office of Education Bulletin 247. U.S. Government Printing Office, Washington 25, D.C. 1951. 193 p. (45 cents)
- Statistical Abstract of the United States*. U.S. Government Printing Office, Washington 25, D.C. (Annually). 1000 p. (\$2.75)
- The World Almanac and Book of Facts*. The New York World-Telegram and the Sun (Annually). 900 p.

## PART II

### OCCUPATIONS BY MAJOR GROUPS

11. *The Professional Occupations*
12. *The Semiprofessional Occupations*
13. *The Administrative Occupations*
14. *The Office Occupations*
15. *The Selling Occupations*
16. *The Domestic Service Occupations*
17. *The Personal Service and Building Service Occupations*
18. *The Protective Service Occupations*
19. *The Agricultural, Fishery, and Forestry Occupations*
20. *The Skilled Occupations—The Craftsmen*
21. *The Semiskilled Occupations—The Operatives*
22. *The Unskilled Occupations*



## CHAPTER II THE PROFESSIONAL OCCUPATIONS

It is not easy to define exactly what a profession is. Many professions—including, for example, dentistry, medicine, and pharmacy—are licensed. Nurses must be registered. Teachers must have teaching certificates. Lawyers must pass bar examinations. Most professional groups have set up their own standards, which they require all members to meet.

Professional workers in general must have a high degree of mental ability, and such ability must be developed through several years of study in college. Architects, chemists, doctors, engineers, and veterinarians take formal, well-organized courses of study in selected colleges and universities. Authors, artists, editors, musicians, and actors may engage in their pursuits without the background of as much formal education if they have had practical experience.

Fifty years ago the leading professions were law, medicine, teaching, and theology. If a man wished to become a lawyer, he could read law in a lawyer's office for three years and then be admitted to the bar. The word "bar" is a symbol for the legal profession, and "admitted to the bar"

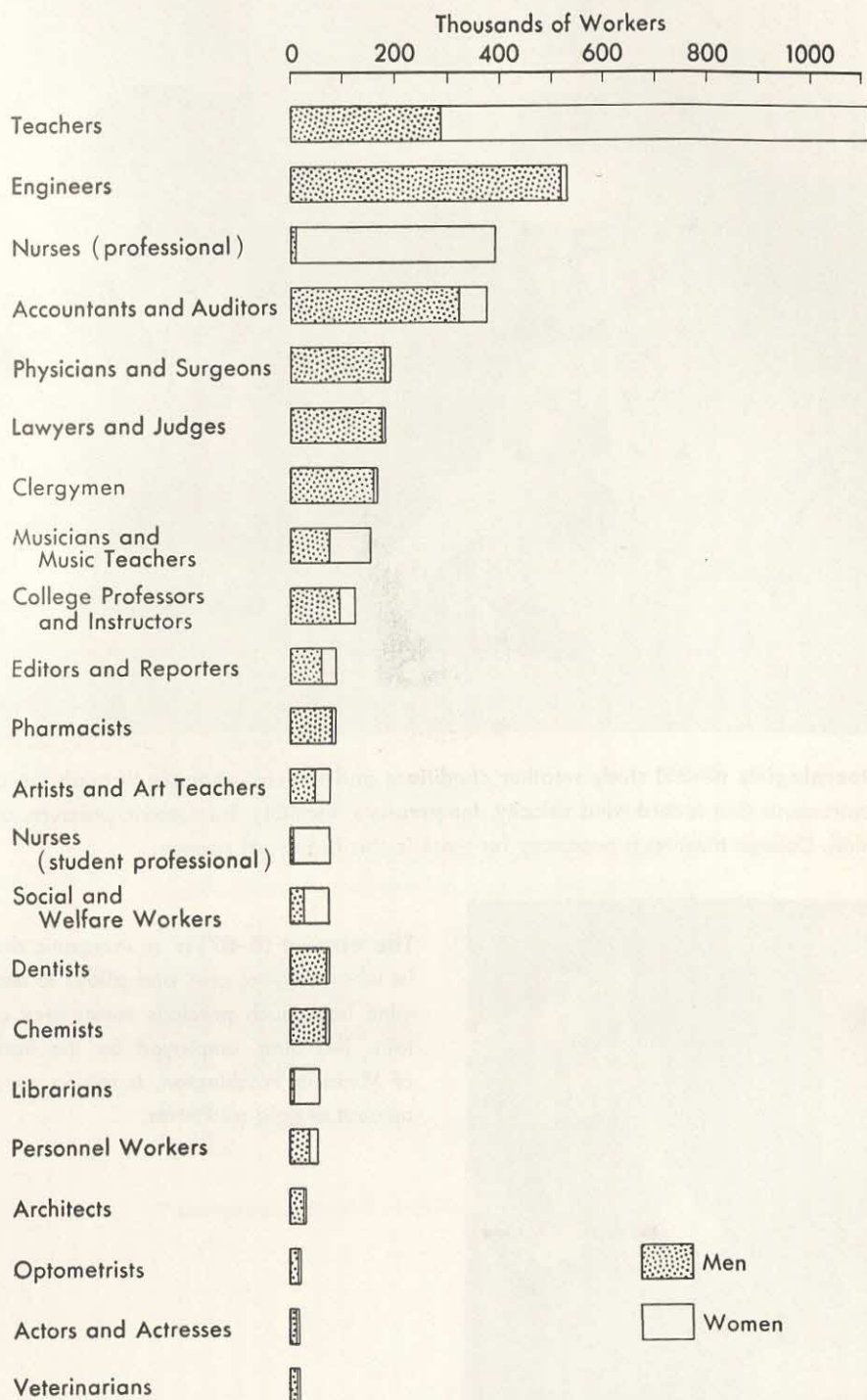
means licensed to practice law. Likewise in other professions, at one time a man could serve a sort of apprenticeship instead of attending college.

Today many occupations are considered professional. Professional associations have become strong in many fields and have tightened up their educational requirements and licensing procedures. To be admitted to the bar today, one has to meet certain educational requirements and pass a state examination. Most states require graduation from a law school approved by the American Bar Association.

The professions are difficult to enter because (1) only 9 percent of the working population are in professions and therefore opportunities are limited; (2) the scholastic requirements are becoming increasingly difficult to meet; and (3) the length of training in college is being increased, requiring more time to complete the necessary preparation.

Although a profession is not easily defined, we do have some guide as to what occupations are considered professional. The *Dictionary of Occupational Titles* lists the professional occupations shown in the table on page

# MAJOR PROFESSIONAL OCCUPATIONS



SOURCE: 1950 CENSUS DATA





COURTESY U. S. CIVIL SERVICE COMMISSION

**Meteorologists (0-35)** study weather conditions and forecast changes through the use of instruments that record wind velocity, temperature, humidity, barometric pressure, and rainfall. College training is necessary for work in this branch of science.



COURTESY U. S. DEPT. OF LABOR

**The assayer (0-07)** is an inorganic chemist who analyzes ores and alloys to determine how much precious metal they contain. This man, employed by the Bureau of Mines in Washington, is testing ore for amount of gold and silver.

## PROFESSIONAL OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 0-01 Accountants and auditors\*
- 0-02 Actors and actresses
- 0-03 Architects
- 0-04 Artists, sculptors, and teachers of art
- 0-06 Authors, editors, and reporters
- 0-07 Chemists
- 0-08 Clergymen
- 0-11 College presidents, professors, and instructors\*
- 0-12 County agents and farm demonstrators
- 0-13 Dentists
- 0-14 Engineers, metallurgical,\* and metallurgists
- 0-15 Engineers, chemical\*
- 0-16 Engineers, civil\*
- 0-17 Engineers, electrical\*
- 0-18 Engineers, industrial\*
- 0-19 Engineers, mechanical\*
- 0-20 Engineers, mining\*
- 0-22 Lawyers and judges\*
- 0-23 Librarians
- 0-24 Musicians and teachers of music
- 0-25 Pharmacists
- 0-26 Physicians and surgeons\*
- 0-27 Social and welfare workers
- 0-30 Teachers, primary school and kindergarten\*
- 0-31 Teachers (secondary school) and principals\*
- 0-32 Teachers and instructors not elsewhere classified
- 0-33 Trained nurses\*
- 0-34 Veterinarians
- 0-35 Natural scientists
- 0-36 Social scientists
- 0-38 } Professional occupations not elsewhere classified
- 0-39 }

\* Occupation discussed in this chapter.



165. The *Dictionary* code number is shown with each occupation as an aid in filing occupational materials and also as a means of identifying the professions in occupational literature.

These occupations represent nearly all of the professions. Standards in these fields are being raised constantly to lengthen the professional training required. One out of every eight employed women engages in the professions, mostly in teaching and nursing. One out of every fourteen employed men is in a profession. Some professions furnish more opportunities for workers than others. Professions with the largest numbers of workers, with figures for 1950, are shown in descending order in the list below.

#### TEACHER (0-30 THROUGH 0-32)

Pupils in school can observe the occupation of the teacher every day. Because young people know what teaching is like and become familiar with the teaching profession very early,

many of them make up their minds that they want to teach.

Under our constitutional government, our public school systems are the responsibility of each state. Public schools within a state are controlled by state, county, city, or town governments. In any state the state department of education, headed by the state Superintendent of Education, or the state Commissioner of Education, determines the educational policies and issues teaching certificates to those who qualify to teach within a state. A teacher's certificate shows that the teacher has met the training requirements and has qualifications that meet the standards of education set by the state. Private schools are not a part of the public school system but are supported and controlled by individuals, agencies, or church groups.

Teachers are usually employed at one of three levels of education: (1) kindergarten and elementary, (2) secondary, or high school, and (3) college and university. About a million

#### PROFESSIONS WITH THE LARGEST NUMBERS OF WORKERS IN 1950

Teachers	1,120,000
Engineers	525,000
Nurses	398,000
Physicians	192,000
Lawyers	180,000
Clergymen	165,000
Musicians	153,000
College professors and instructors	125,000
Pharmacists	88,000
Dentists	75,000

and a quarter teachers are employed annually to instruct more than 30 million students. Four out of five teachers are women. The number of teachers at each level—elementary, high school, and college—is shown in the table below.

**Kindergarten and primary teacher (0–30).** More than half (55%) of all persons in the teaching profession are employed in the kindergartens and primary schools—also known as grade schools or grammar schools. These teachers usually spend the whole day with one group of pupils and teach several different subjects. A state certificate is required by all states to teach in public kindergarten or elementary schools. One-third of the states require 4 years of college. Twenty-one states require 2 or 3 years of college training. In the other states the requirements are lower. The minimum age for teaching is 18.

Opportunities for teaching in the kindergartens or elementary schools are excellent, as there is a serious shortage of teachers for this level.

**Secondary or high school teacher (0–31).** Teachers in high schools usually teach a special subject and perhaps one or two additional subjects. They often have other duties, such as supervising study hall, coaching sports, or sponsoring other activities. Requirements for a teaching certificate for high school are likely to be a bachelor's degree (B.S.), including a half year of work in education and student teaching. Some school systems require a year of graduate work to teach in high school. There is a good demand for high school teachers, except in English, history, and languages.

**College and university professor (0–11).** Colleges and universities generally require their professors to have

**NUMBER OF TEACHERS IN THE UNITED STATES, 1953**

Number of Schools	Number of Students	Number of Teachers			
		Men	Percent	Women	Percent
138,600 Elementary schools	22,201,505	65,407	18	607,258	71
27,900 Secondary schools	6,427,042	158,536	43	207,741	24
1,889 Colleges	2,659,021	145,861	39	44,492	5
168,389 Institutions	31,287,568	369,804	100	859,491	100

**This table should be read as follows:** 138,600 elementary schools enroll 22,201,505 students and provide 65,407 men and 607,258 women teachers. Of all teachers, 18 percent of the men and 71 percent of the women teach in elementary schools. The other two items should be read in the same way.

Note that most of the men who teach are employed in the public high schools, or secondary schools, but two out of five of the men teach in the colleges. Most women teachers are employed in the public kindergarten and elementary schools, and relatively few women teach in college.



a doctor's degree (Ph. D. or Ed. D.). Those who teach in college begin as instructors and are later promoted to assistant and associate professors. To be a full professor, a person must have a number of years of experience. In 4-year institutions most professors are men, but in junior colleges many women are employed to teach. A college professor usually specializes in one field of study and does considerable research work in that field. Opportunities in college teaching are good but vary greatly according to subject matter.

**Income of teachers.** After World War II the low pay of teachers be-

came a national problem, but since then salaries have been raised. The size and wealth of the community determines teachers' salaries in the public schools. In metropolitan areas typical salaries are \$4000 for elementary teachers and \$4700 for high school teachers. In small cities (from 10,000 to 30,000) salaries might vary from \$2800 to \$3300. College instructors begin at salaries just under \$3000, and experienced professors receive much more. The trend is toward increasing the salaries of teachers generally.

**Preparation of teachers.** All states require certain college credits in education courses to qualify for a teaching certificate. Courses in education are offered in at least 1200 colleges, universities, and teachers colleges. Such courses prepare teachers for employment in the public schools. To teach in college, such courses in education are not required, as they are in public schools; instead, those who intend to teach in college must attend graduate schools and study for a master's and a doctor's degree. Your state department of education will give the necessary information about courses of study and institutions that prepare teachers.

### TEACHERS TRAINED AND TEACHERS IN DEMAND

#### ELEMENTARY

SUPPLY



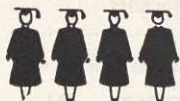
DEMAND



1 was trained for every 3 who were needed

#### HIGH SCHOOL

SUPPLY



DEMAND



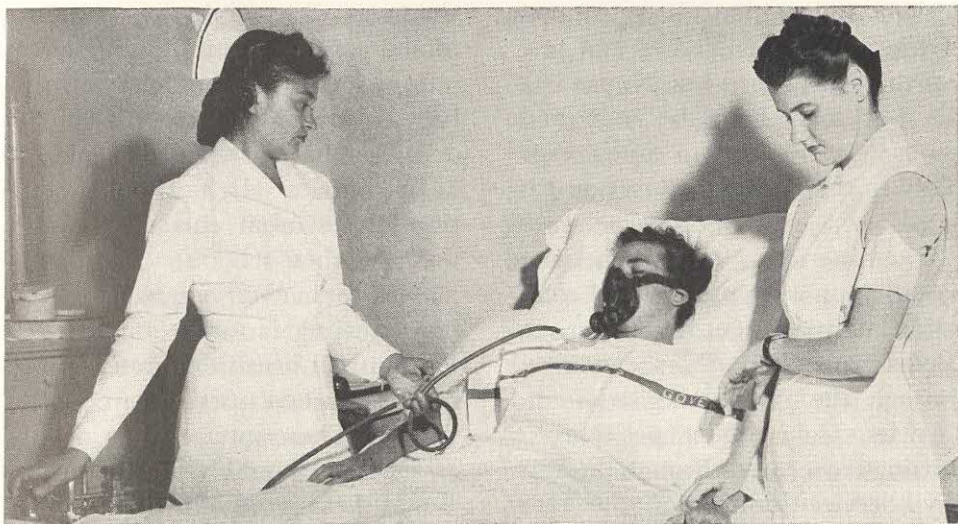
4 were trained for every 1 who was needed

SOURCE: BUREAU OF LABOR STATISTICS

With the increase in birth rate in the United States during World War II, the enrollment of pupils in elementary schools has increased faster than the numbers of teachers being trained. This increase will not affect the high school enrollment for several years, and the demand for high school teachers today is not so great.

### TRAINED OR REGISTERED NURSE (0-33)

Training for nursing began in 1854 when Florence Nightingale took charge of nursing the wounded English soldiers in the Crimean War.



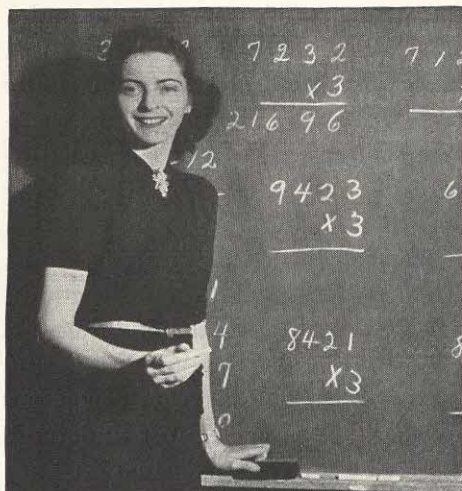
COURTESY U. S. CIVIL SERVICE COMMISSION

**Trained nurse (0-33).** Only a trained nurse (R. N.) is allowed to administer oxygen to a patient. Registered nurses are in great demand in hospitals, schools, industry, the armed services, and for private duty. Information about training opportunities may be obtained from the National League of Nursing, 2 Park Avenue, New York 16, N. Y.

Today the trained or registered nurse uses her professional training, experience, and skill in caring for ill and injured persons in hospitals or in homes. She gives expert bedside care, watches a patient's symptoms, and in general guards health and fights disease.

In 1950 there were 398,000 professional nurses and 76,000 student professional nurses. About 2 percent were men. About half of the nurses were in institutional service—that is, in hospitals, schools of nursing, mental institutions, and others. One-fifth were in private practice, and the remainder were in public health, industrial, or office nursing work.

One study shows that professional nurses earn about \$195 per month,



COURTESY U. S. OFFICE OF EDUCATION, PHOTO BY BONN

**Teacher (0-31).** The shortage of people in elementary teaching and the trend toward increasing salaries today in this profession are among the reasons why you might want to consider training for it.



without living quarters; one-fourth of the nurses earn more; and one-fourth of them earn less. Nurses usually work an 8-hour day, but there are many variations in hours, especially in the hours of nurses on private duty.

The American Nurses Association has a nation-wide professional counseling and placement service for registered nurses and others, conducted through the nurses' registries and agencies. Government positions in nursing are secured through the U. S. Civil Service Commission, the Army and Navy Nurse Corps, and the U. S. Public Health Service. State and municipal civil service commissions also offer opportunities for nurses through examinations.

**Registration of nurses.** Every state has its own nurse practice act and a state board of nurse examiners. A new graduate nurse must pass the state board examinations to be registered, after which she is entitled to use the initials "R. N." (Registered Nurse) after her name.

Those who enter nursing must have good health, physical endurance, and enjoy caring for the sick. Student nurses who are single and between 20 and 35 years of age are preferred, and each must undergo a thorough physical examination.

**Preparation for nursing.** You may prepare for nursing near home. About 1200 nursing schools train nurses, and 200 colleges offer programs leading to a degree in nursing. Tuition fees vary widely from no

charge at all to modest charges for a total 3-year program. In a single year state accredited schools of nursing have enrolled as many as 127,000 students and have graduated as many as 34,000 nurses. High school graduation is the usual entrance requirement for these schools.

As a human service in a community, nursing is important to every local citizen because no one can predict if or when nursing care will be needed. Those interested in nursing as a career should write to the National League of Nursing, 2 Park Avenue, New York 16, New York.

#### ENGINEER (0-14 THROUGH 0-20)

The term "engineer" was first used in the Middle Ages for men who planned military works and engines needed in time of war—that is, it was applied to military men. Much later, about 1800, nonmilitary construction for civilian use became known as "civil engineering" to distinguish it from military engineering. Civil engineering, then, was the first branch of engineering.

Today an engineer is anyone who uses a combination of arts and sciences to make materials and power useful to man—whether it be for highways, railroads, airplanes, automobiles; for systems of steam, gas, oil, electricity, water supply, communications, and sanitation; or for development of mines, factories, tools, and machines. An engineer is known by

the branch of engineering in which he specializes. The largest groups of engineers are, in order of size, civil, mechanical, and electrical engineers.

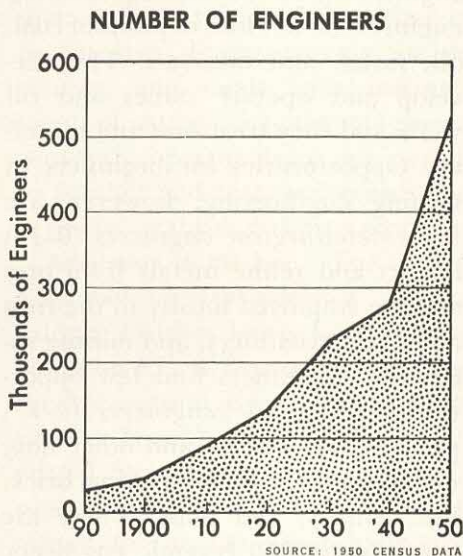
**Civil engineer (0-16).** The largest branch of engineering is that of civil engineering, with 123,000 civil engineers in 1950. Civil engineers design and supervise the construction of most of the stationary structures, such as roads, railroads, buildings, tunnels, bridges, dams, canals, and water-supply and sewerage systems. They must move from place to place wherever the work is. About half of the civil engineers are employed in local, state, and national government agencies, and prospects are good for those who are well trained.

**Mechanical engineer (0-19).** The next largest branch is the group of mechanical engineers (109,000 in 1950). Mechanical engineers work with machines and the power to operate machines on land, water, and in the air. They design and plan the construction of boilers, steam engines, turbines, and gas engines, and also the tools with which these machines are built. Employment opportunities in mechanical engineering are expanding.

**Electrical engineer (0-17).** The third largest group (more than 106,000 in 1950) is made up of electrical engineers, who specialize in electricity—power generation, distribution, lighting, communication, and transportation. Two-thirds of these engineers are employed in the manufacture of electrical machinery; in electric utili-

ties; in telegraph, telephone, radio and television industries; and in electronics manufacturing. Electrical engineers are employed in large numbers by light and power companies, telephone companies, and radio and television stations. There are good prospects in this expanding field.

**Chemical engineer (0-15).** Another large branch of engineering is made up of the chemical engineers. Chemical engineers develop, design, and control machines and processes that utilize chemicals. Such products as nylon, rayon, and plastics have resulted from applying the findings of research in industry done by chemical engineers. About 32,500 chemical engineers are employed in the chem-



The number of engineers employed has increased continuously in the United States since 1890, and the indications are that there will continue to be a demand for engineers in the years ahead.



ical industries and petroleum refineries, the majority doing research and production work. These engineers are somewhat younger than those in other engineering branches, and a higher proportion of chemical engineers have graduate training than any other group of engineers. Chemical engineers are needed, and many are being trained in the colleges.

**Other engineers.** In addition to the large branches of mechanical, civil, electrical, and chemical engineering, some of the other branches are of interest. *Industrial engineers* (0-18) are concerned with factory production—planning, organization, methods, and control. The field of industrial engineering is expanding. *Mining engineers* (0-20) find deposits of coal, oil, metal, and minerals. They develop and operate mines and oil wells, and they treat ores and minerals. Opportunities for beginners in mining engineering, however, are few. *Metallurgical engineers* (0-14) extract and refine metals from ores and are employed mostly in the iron and steel, machinery, and mining industries. Beginners find few opportunities. *Ceramic engineers* (0-15) process and use clay and other non-metallic minerals for making brick, tile, pottery, and glass. There are only about 3000 ceramic engineers.

**The engineer's job and pay.** In any branch of engineering, an engineer is likely to work at one or more of these seven types of jobs—construction, design, development, operation,

production, research, or sales. His first job is likely to be one to gain experience, either in a shop, in a drafting room where designs are made, in a research laboratory for experimentation, in a testing department trying out new equipment, in the field on a construction project, or with a surveying party. In most states, before they are allowed to carry out their work, professional engineers are required to register, as a protection to the public against untrained and unqualified workers in strategic positions. More than 525,000 engineers of all types are employed. Earnings of engineers in the first year may be around \$240 per month, but after 5 years their earnings are likely to increase to three or four hundred dollars a month. The physical requirements are so strenuous that few women become engineers.

**Preparation for engineering.** If you choose engineering as a career, you should take all the mathematics, physics, chemistry, and biology possible in high school, as these are the fields of basic science which form the foundation of engineering training. In order to prepare for engineering, you must attend one of the professional engineering schools. In each state one or more engineering schools offer proper training for different types of engineers. Training in any branch of engineering must satisfy the educational, experience, and legal requirements necessary for the special field of work. Such requirements and standards are set by the

engineering colleges, engineering societies, and licensing authorities.

All engineering curricula may be divided into five groups: (1) basic science; (2) applied science, such as mechanics, and geology; (3) applied engineering courses, including machine design and plant lay-out; (4) administration and management; and (5) general courses for educational background. The first year of college is much the same for all branches of engineering. Specialization comes later. Answers to many questions about preparation in engineering schools may be found in the publications of the Engineers' Council for Professional Development, 29 West 39th Street, New York 18, New York.

### LAWYER (0-22)

A lawyer—often known as an attorney, counselor, jurist, or solicitor—is an officer of the court with both public and private duties to perform. He must be true to both the court and his client, and he must see that justice is carried out. In dealing with his client, he observes strict confidence, transacts private business, reports progress, and never gives away secrets. He must be well qualified from the standpoint of both education and law, and he must agree not to advertise for clients, because advertising is unethical in law. Lawyers and judges in the United States number about 174,000 men and 6000 women.

**Law specialties.** A lawyer may specialize in a particular branch of law. Often such specialization is better than a general practice. An *admiralty lawyer* takes cases which have to do with affairs on the high seas—shipping, ocean trade, and accidents. A *civil lawyer* specializes in disputes, such as damage suits and breach of contract suits; prepares and draws up deeds to property, wills, and contracts; and may act as trustee or guardian of an estate. A *corporation lawyer* specializes in the laws that relate to corporations, or companies, and represents the corporation in all court actions. A *criminal lawyer* takes cases dealing with offenses against society—thrift, murder, and arson—and conducts trial before jury. A *patent lawyer* specializes in patent law, secures patents for inventors, and deals with infringements of patents. A *real-estate lawyer* conveys properties from one person to another and searches records and deeds to establish titles to property.

**Admission to the bar.** "The bar" is a symbol for law practice. After a student finishes law school and receives his LL. B. degree, he must pass the bar examinations before he can practice law. Once passed, he is "admitted to the bar" or licensed to practice law. Conditions of being admitted to the bar are usually prescribed by the supreme court of a state. Information about practicing law may be obtained from your state capital by writing to the Clerk of the State Supreme Court or to the Secre-



tary of the State Board of Bar Examiners.

**Opportunities in law.** Competition in the legal profession is keen. Large cities are overcrowded with lawyers, but in small cities there are many good openings. About two-thirds of all lawyers are in private practice. Others accept executive positions in corporations dealing with business, industry, commerce, banking, and insurance. In the Federal Government, lawyers find work as attorneys, legal examiners, patent experts, claims examiners, and administrators. Lawyers are often elected to public office, and most mayors, governors, judges, congressmen, and senators have been practicing lawyers at one time. Law firms are composed of two or more senior lawyers who form a partnership. In such firms young lawyers find jobs as junior assistants in order to gain experience necessary for private practice or to become partners in the firm.

**Preparation for law.** Most states require 5 years of college training of students intending to practice law—2 or more years of prelegal training in arts and sciences and 3 years of professional training in a law school. There are about 121 approved law schools in the United States, and 28 approved schools offer evening courses. The highest enrollment ever reached in these schools was in 1947 when 50,000 students were studying law. The standards of legal education have been strengthened greatly through the efforts of the American

Bar Association, 1140 North Dearborn Street, Chicago, Illinois.

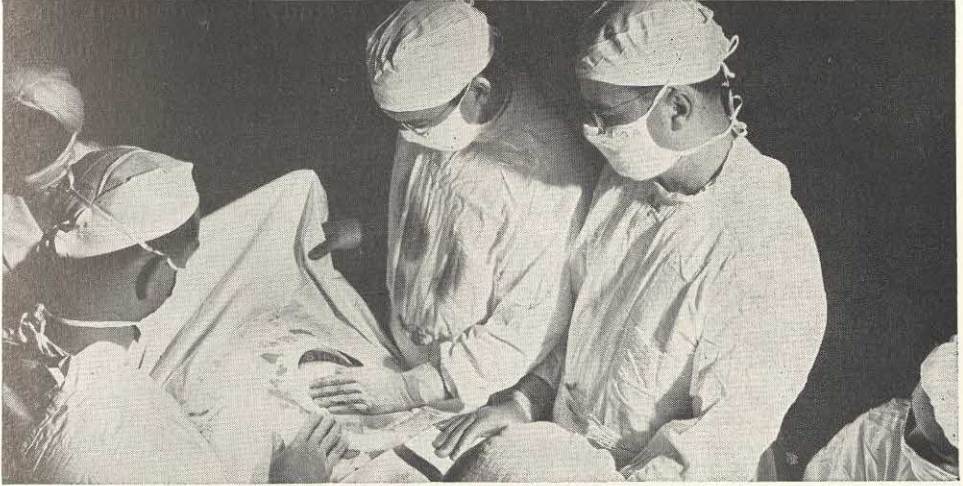
### PHYSICIAN (0-26)

Next time you see a barber's pole, you may think of the beginnings of medicine, for in the 1400's the work of the surgeon and the barber went hand in hand. Bleeding a patient, or "letting blood," was such common practice that the red stripes on the pole symbolized a bandaged arm.

Today, the physician, or doctor of medicine, must be qualified by education and experience before he can be licensed to diagnose and treat human diseases. In promoting health, he advises on methods of preventing disease and reports to the local board of health on births, deaths, and contagious diseases. He endeavors to prevent or cure his patient's ills by giving advice, prescribing medicines, and performing operations.

Physicians numbered more than 192,000 men and women in 1950, most of whom were engaged in private practice, although many were employed on hospital staffs and in government positions. The demands for physicians' services is greater than ever before on account of the increased population, care of veterans, and the limited number of doctors being trained. The need is especially great in the rural areas.

Half of the doctors are general practitioners who attend to all kinds of medical cases, prescribe treatment, and perform minor operations. Phy-

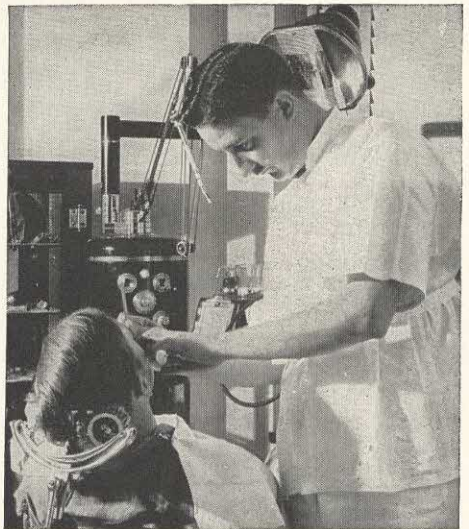


COURTESY U. S. PUBLIC HEALTH SERVICE

**Physicians and surgeons (0-26).** A physician may specialize in one of any number of branches of medicine, such as surgery, and even within a branch there is specialization, such as brain surgery and eye surgery. Each further step of specialization requires more training and experience beyond the degree of M. D.

sicians who specialize must meet the requirements of one of the 16 specialty boards of the medical profession. Many specialize in treating the ears, nose, throat, or other parts of the body, and many devote themselves to surgery only. The *surgeon* specializes in operations. The *pathologist* studies the nature, cause, and development of diseases. The *oculist* is an eye specialist. The *dermatologist* is a skin specialist.

**License to practice medicine.** Before a young physician may open an office, he must obtain a license to practice medicine from the state board of medical examiners. Licensing protects the public against persons who are not qualified to treat human ills. Each state requires medical practice by making its own laws and provid-



COURTESY U. S. PUBLIC HEALTH SERVICE

**Dentist (0-13).** Dentistry may be learned in any of the 40 dental schools in the United States. Two years of predental study and four years of dentistry are the usual requirements for a degree.



ing its own medical examining board. Basic science boards have been established in 12 states and the District of Columbia. In these states students must pass the basic science examination before attempting to heal the sick by any method. The National Board of Medical Examiners conducts examinations in the United States during the year and issues certificates that are recognized by the licensing boards of 42 states and 4 territories.

**Income of physicians.** In 1947 physicians were in the top 3 percent of workers with high incomes. Their average NET income (after expenses are taken out) was nearly \$9900. A physician's income depends upon the individual, his success in caring for the sick, and his location. Incomes are higher in large cities. Doctors in salaried positions receive stable incomes if not high ones. Incomes of doctors in private practice may be uncertain but are likely to increase more rapidly.

**Preparation for medicine.** Preparing for the medical profession requires 7 to 9 years of training after high school. Approximately 80 medical schools prepare medical doctors in the United States. Women, admitted to all but seven schools, make up about 5 percent of the enrollments. About 25,000 men and 1600 women were enrolled in 1951, and 5700 men and 500 women were graduated. Medical schools require high school graduation AND 2 to 4 years of pre-medical work in college for entrance. Then the student is ready to begin

a 4-year study in a medical school.

Upon graduation it is customary to spend an additional year or two of internship in a hospital before being ready to practice medicine. Medical licensing boards of 22 states require a term of internship of all candidates for a license to practice medicine. This means that a student will be at least 27 years of age, and perhaps nearer 30, before he is ready to earn his living. About 6000 internships become available in approved hospitals each year.

The American Medical Association, 535 North Dearborn Street, Chicago, Illinois, responsible for improving standards and practices in modern medicine, will furnish further information about medical schools and requirements.

## ACCOUNTANT (0-01)

Until 1896 all of the accounting work in industry was done by bookkeepers. In that year New York State enacted a law for the certification of public accountants. Now bookkeeping is one branch of accountancy and deals only with the keeping of financial records of a business. (See Chapter 14.) In general, accountants prefer to work with figures rather than with words.

**Kinds of accountants.** An accountant not only keeps the accounts of a business or government agency, but he also devises accounting systems to meet the needs of a business, prepares financial statements, and audits books. He may work in any one of

the four large branches of accountancy: (1) *Business administration* covers the handling of money, credit, investments, production, distribution, sales, and advertising, and aims at the successful operation of a business. An adequate accounting system can locate unprofitable departments so that they may be improved or closed out. (2) *Private accounting* covers the maintenance of financial records and the analyzing of business accounts for owners and stockholders in a single organization. (3) *Government accounting* involves the estimating of taxes needed and the accounting of all public finances. (4) *Public accounting*, in charge of a Certified Public Accountant (C. P. A.), covers services to clients on a fee basis.

**Certified Public Accountant (C. P. A.).** The C. P. A. works for those who call for his services. He may install financial systems in a private business, audit books, examine financial records, prepare tax reports, and advise on the operation of a business. Before the public accountant is entitled to use the initials C. P. A. after his name, he must be certified through examination in the state in which he intends to practice. In New York State he must be 21 years of age, have had accounting experience, and have finished accountancy courses in an approved school or college. In Cali-

fornia he must show completion of high school and evidence of 3 years' experience in accountancy.

**Opportunities for accountants.** There were 320,700 men and 55,500 women accountants and auditors in 1950, of whom 35,000 were C. P. A.'s. About 400 women are C. P. A.'s. Employment prospects are good for experienced accountants and C. P. A.'s. Beginners usually start in compiling data and otherwise assisting experienced accountants. There is a demand for accountants who are accurate, dependable, intellectually honest, and able to keep business secrets.

**Income of accountants.** Beginners may expect salaries up to \$2400 per year. Staff employees in public accounting firms may receive up to \$10,000. Junior accountants and auditors in the Federal Government begin at \$3175 per year.

**Preparation for accountancy.** Many universities offer accountancy or business administration for four years leading to a bachelor's degree. In large cities, schools of accountancy give courses leading to a diploma or a degree. Often business experience may be given as some credit toward this training. You may obtain more detailed information about schools and preparation by writing to the American Institute of Accountants, 270 Madison Avenue, New York 16, New York.

### For Discussion

1. In 1900, which occupations were considered as "professions?"
2. Since 1900, what professions have been added to the list?



3. In number of workers, what six professions take the lead?
4. How does a person prepare for the teaching profession?
5. Explain what is meant by a "registered nurse."
6. In order of the greatest number of workers, name four types of engineers.
7. What does "admitted to the bar" mean?
8. How does a medical graduate obtain a license to practice medicine?
9. What does a Certified Public Accountant do?
10. In general, what kind of preparation is needed to enter a profession?

### What to Read

#### ACCOUNTANT:

*Employment Outlook in Accounting*. Bureau of Labor Statistics Bulletin 1048. U.S. Government Printing Office, Washington 25, D.C., 1952. 32 p. (20 cents)

#### ACTOR:

*Opportunities in Acting*, Frank Vreeland. Vocational Guidance Manuals, Inc., New York, 1946. 92 p.

*Your Career in the Show Business*, Paul Denis. E. P. Dutton & Co., Inc., New York, 1948. 240 p.

#### ACTUARY:

*A Career as Actuary*. The Actuarial Society of America, 393 Seventh Ave., New York 1, 1946. 8 p.

#### ADVERTISING MAN:

*Advertising as a Career*, Mark O'Dea. Printers' Ink Publishing Company, Inc., New York, 1945. 138 p.

*Your Career in Advertising*, Don Rivers. E. P. Dutton & Co., Inc., New York, 1947. 223 p.

#### ARCHITECT:

*Opportunities in Architecture*, William Thorpe. Vocational Guidance Manuals, Inc., New York, 1946. 92 p.

## ARTIST:

*Art in the New Land*, Charlie May Simon. E. P. Dutton & Co., Inc., New York, 1949. 207 p.

## ASTRONOMER:

*The Outlook for Women in Physics and Astronomy*. Women's Bureau Bulletin 223-6. U.S. Government Printing Office, Washington 25, D.C., 1948. 32 p. (15 cents)

## BIOLOGIST:

*The Outlook for Women in the Biological Sciences*. Women's Bureau Bulletin 223-3. U.S. Government Printing Office, Washington 25, D.C., 1948. 87 p. (25 cents)

## CHEMIST:

*Crucibles—The Story of Chemistry*, Bernard Jaffe. Simon and Schuster, Inc., New York, 1948. 480 p.

## COUNSELOR:

*Opportunities in Vocational Guidance*, Sarah Splaver. Vocational Guidance Manuals, Inc., New York, 1949. 104 p.

## DENTIST:

*Dental Education Today*, Harlan H. Horner. The University of Chicago Press, Chicago, 1947. 420 p.

*Dentist*. Michigan Unemployment Compensation Commission, Detroit, 1948. 20 p.

## ENGINEER:

*Annual Report of the Engineers' Council for Professional Development*. (Lists accredited colleges.) Engineers' Council for Professional Development, 29 W. 39 St., New York (Annually).

*Building an Engineering Career*, Clement C. Williams. McGraw-Hill Book Company, Inc., New York, 1946. 309 p.

*Employment Outlook for Engineers*. Bureau of Labor Statistics Bulletin 968. U.S. Government Printing Office, Washington 25, D.C., 1950. 119 p. (50 cents)

*Famous Engineers*, Sara Ruth and Emily Watson. Dodd, Mead & Company, Inc., New York, 1950. 152 p.

*An Introduction to the Engineering Profession*, John G. McGuire and Howard W. Barlow. Addison-Wesley Press, Cambridge, Mass., 1950. 207 p.



## FORESTER:

*Careers in Forestry*. U.S. Forest Service Misc. Publication No. 249, U.S. Department of Agriculture, 1945. 23 p. (Free)

## JOURNALIST:

*Opportunities in Journalism*, Elias E. Sugarman. Vocational Guidance Manuals, Inc., New York, 1946. 59 p.

## LIBRARIAN:

*Opportunities in Library Careers*, Robert E. Kingery. Vocational Guidance Manuals, Inc., New York, 1952. 112 p.

## METEOROLOGIST:

*The Outlook for Women in Geology, Geography, and Meteorology*. Women's Bureau Bulletin 223-7. U.S. Government Printing Office, Washington 25, D.C., 1948. 52 p. (15 cents)

## MUSICIAN:

*Professional Musicians*. Michigan Unemployment Compensation Commission, Detroit, 1949. 22 p.

*Your Guide to Successful Singing*, Eugene Gamber. Windsor Press, Chicago, 1950. 160 p.

## NURSE:

*Careers for Nurses*, Dorothy Deming. McGraw-Hill Book Company, Inc., New York, 1952. 351 p.

*Lonely Crusader: The Life of Florence Nightingale*, Cecil Woodham-Smith. Whittlesey House, McGraw-Hill Book Company, Inc., New York, 1951. 256 p.

*Nursing for the Future*, Esther L. Brown. Russell Sage Foundation, New York, 1948. 198 p.

## PHARMACIST:

*Pharmacist*. Michigan Unemployment Compensation Commission, Detroit, 1948. 22 p.

*Pharmacy*, Walter J. Greenleaf. Guidance Leaflet No. 14. American Pharmaceutical Association, Washington, D.C., 1949. 21 p.

## PHYSICIAN:

*Doctor of Medicine*, Irma Gross Drooz. Dodd, Mead & Company, Inc., New York, 1949. 308 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern professional occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Discuss the life of a great artist or the training of an artist.
<b>BUSINESS:</b>	Discuss entrance requirements to schools of accountancy.
<b>ENGLISH:</b>	Show why professional workers need careful training in exact expression, composition, diction, and public speaking.
<b>HEALTH:</b>	Name several health workers who are classified as professional.
<b>HOME ECONOMICS:</b>	What professional occupations are open to women with home economics majors?
<b>LANGUAGES:</b>	Name the professions in which a knowledge of some foreign language is necessary. Why? What languages?
<b>MATHEMATICS:</b>	Make a graph showing the proportion of professional workers to other workers.
<b>MUSIC:</b>	Discuss the career of a composer or the career of a famous conductor.
<b>OCCUPATIONS:</b>	Discuss licensing and certification requirements of professional workers. (Obtain regulations from your state department of education.)
<b>SCIENCE:</b>	Discuss the preparation of a chemist, a physicist, or an engineer.
<b>SHOPWORK:</b>	What professional requirements must a teacher of shopwork meet?
<b>SOCIAL STUDIES:</b>	Trace the history and development of medicine, law, engineering, or teaching.



*The Physician in the U.S. Public Health Service.* U.S. Public Health Service. U.S. Government Printing Office, Washington 25, D.C., 1948. 24 p. (15 cents)

RESEARCHER:

*Opportunities in Market Research,* John H. Platten, Jr. Vocational Guidance Manuals, Inc., New York, 1946. 69 p.

SCIENTIST:

*Chambers's Dictionary of Scientists,* A. V. Howard. E. P. Dutton & Co., Inc., New York, 1951. 499 p.

*The Outlook for Women in Science.* Women's Bureau Bulletin 223-1. U.S. Government Printing Office, Washington 25, D.C., 1949. 81 p. (20 cents)

SOCIAL WORKER:

*Social Work as a Profession.* American Association of Schools of Social Work, 1313 E. 60 St., Chicago, 1948. 33 p. (Free)

TEACHER:

*Employment Outlook for Elementary and Secondary School Teachers.* Bureau of Labor Statistics Bulletin 972. U.S. Government Printing Office, Washington 25, D.C., 1949. 89 p. (35 cents)

*Suggestions for Securing Teaching Positions.* W. Earl Armstrong. U.S. Office of Education Circular No. 224. U.S. Office of Education, Washington 25, D.C., 1950. 15 p. (Free)

THERAPIST:

*A Career of Service in Occupational Therapy.* American Occupational Therapy Association, 33 W. 42 St., New York 36, 1949. Leaflet. (Free)

*Physical Therapists.* Women's Bureau Bulletin 203-1. U.S. Government Printing Office, Washington 25, D.C., 1952. 51 p. (20 cents)

VETERINARIAN:

*Veterinarian.* Michigan Unemployment Compensation Commission, Detroit, 1948. 19 p.

*Veterinary Medicine,* Walter J. Greenleaf. Guidance Leaflet No. 18. U.S. Government Printing Office, Washington 25, D.C., 1940. 15 p. (5 cents)

## GENERAL

[*Note:* Each of the following titles represents a series of occupational leaflets. Write for the publisher's current list.]

*American Industries.* Bellman Publishing Company, Inc., Cambridge 38, Mass.

*Career pamphlets.* B'nai B'rith Vocational Service Bureau, 1424 16 St., Washington 6, D.C.

*Chronicle Occupational Briefs.* Chronicle Guidance Publications, Moravia, N.Y.

*Employment Opportunities in . . .* Bureau of Labor Statistics, U.S. Department of Labor, Washington 25, D.C. (Free)

*Occupational Abstracts.* Personnel Services, Inc., Peapack, N.J.

*Occupational Guide Series.* Michigan State Employment Service, 7310 Woodward Ave., Detroit 2.

*Opportunities in . . .* Vocational Guidance Manuals, Inc., 45 W. 45 St., New York 36.

*The Outlook for Women in . . .* Women's Bureau, U.S. Department of Labor, Washington 25, D.C. (Free)



## CHAPTER I2 THE SEMIPROFESSIONAL

### OCCUPATIONS

The difference between a semiprofessional occupation and a professional occupation is not clear-cut. According to the *Dictionary of Occupational Titles*, an occupation in the semiprofessional group is generally somewhat restricted by law and probably less demanding in terms of the worker's background, initiative, and judgment than one in the professional group. Semiprofessional occupations do not require as much training, are more limited in their scope, and, therefore, can be learned in a shorter time than the professions. The occupations in the semiprofessional group are often more concerned with the technical and mechanical aspects of a field of work than those of the professional group. For example, a draftsman does only a part of the work of a professional architect. He must know how to blueprint the plans that an architect creates and interpret their meaning. By additional study he may later qualify as a full-fledged architect. Workers in the semiprofessional fields deal with both theory and prac-

tice in their specialties. They must be prepared through specialized education or practical experience, or both, to perform their tasks skillfully and well.

Most workers in semiprofessional occupations in 1950 were employed in one of the following classifications: draftsmen (122,000); laboratory technicians, medical and dental (76,000); photographers (53,000); sports instructors (45,000); religious workers (41,000); designers (39,000); funeral directors and embalmers (39,000); surveyors (25,000); therapists and healers (25,000); radio operators (16,000); dancers (16,000); and some others. These workers are classified in the *Dictionary of Occupational Titles*, according to the code numbers given in the list on page 186.

In your community you will find semiprofessional workers in many of these occupations employed in architects' offices, dental and medical laboratories, undertaking establishments, picture studios, YMCA's, YWCA's, and in the public schools.

Many of the occupations in the



COURTESY GREAT NORTHERN RAILROAD

**Surveyor (0-64).** In the laying of railroad tracks, a railroad surveyor is responsible for determining the exact location of the tracks on the earth's surface.



semiprofessional group attract young people on the basis of interest and also because the amount of time required for training is not so great as it is for the occupations in the professional group. While still in school many young people find that they have an aptitude for the kind of work in one of the semiprofessional occupations, and they may develop certain skills in it. Designing airplane models, decorating, drawing, painting, dancing, developing laboratory techniques, taking photographs, participating in athletics, radio and television activities, or helping to put on shows are all examples. Many

of these interests, hobbies, and skills lead to jobs in the semiprofessional fields. These aptitudes and interests, however, must be developed further by systematic training for several years in school, in college, or on the job. Most of these occupations can be learned in less than 4 years. Although the semiprofessional group has few occupations within it, the outlook is good for continued growth of most of these occupations.

### DRAFTSMAN (0-48)

A draftsman works from notes, sketches, and data to prepare accu-

### SEMIPROFESSIONAL OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 0-41 Aviators
- 0-43 Decorators and window dressers\*
- 0-44 Commercial artists\*
- 0-45 Dancers and chorus girls
- 0-46 Designers\*
- 0-48 Draftsmen\*
- 0-50 Laboratory technicians and assistants\*
- 0-52 Healers and medical service occupations
- 0-56 Photographers\*
- 0-57 Athletes, sports instructors, and sports officials
- 0-61 Radio operators\*
- 0-62 Showmen
- 0-64 Surveyors
- 0-65 Embalmers and undertakers
- 0-66 Technicians, except laboratory

- Semiprofessional occupations not elsewhere
- 0-68 } classified (including tree surgeon,\* inter-
  - 0-69 } preters, estimators, employment interviewers,
  - radio announcers,\* religious workers, etc.)

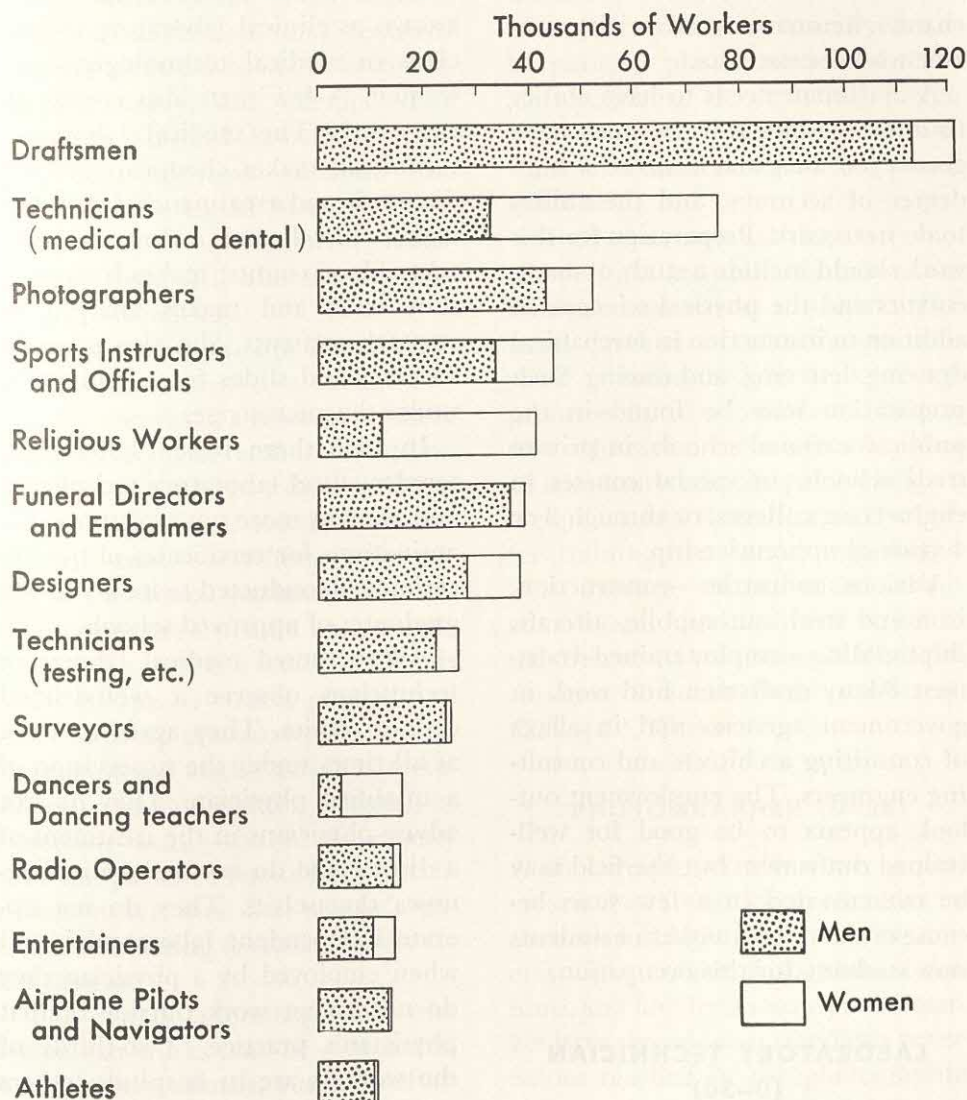
\* Occupation discussed in this chapter.

rate working plans and detailed drawings for architects, engineers, and manufacturers. Using a drawing board and drafting instruments, he makes scale drawings of many types.

A beginner may start as a tracer who copies the finished drawings made by experienced draftsmen.

Drafting is the largest group of the semiprofessional occupations and

### MAJOR SEMIPROFESSIONAL OCCUPATIONS



SOURCE: 1950 CENSUS DATA

In the semiprofessional occupations, the most men are found in drafting, while the women work mostly in laboratories and in religious institutions.



leads to junior draftsman, senior draftsman, and chief draftsman. With further training, some draftsmen advance to jobs in designing and engineering. Most draftsmen specialize in particular fields of work, such as architecture, structural work, mechanics, aeronautics, electricity, marine work, or statistics.

A draftsman needs to have ability to draw. Besides this, he must have good eyes, muscular control, a high degree of accuracy, and the ability to do neat work. Preparation for this work should include a study of mathematics and the physical sciences, in addition to instruction in mechanical drawing, lettering, and tracing. Such preparation may be found in the public vocational schools, in private trade schools, in special courses in engineering colleges, or through 3 or 4 years of apprenticeship.

Various industries—construction, iron and steel, automobile, aircraft, shipbuilding—employ trained draftsmen. Many draftsmen find work in government agencies and in offices of consulting architects and consulting engineers. The employment outlook appears to be good for well-trained draftsmen, but the field may be overcrowded in a few years because of the large number of students now studying for this occupation.

### **LABORATORY TECHNICIAN (0-50)**

If you like to work around a school laboratory, you already know some-

thing of what is required of laboratory technicians. Opportunities are good for well-trained persons in this field, but special training beyond high school is necessary.

**Medical laboratory technician.** Most medical laboratory technicians—also known as clinical laboratory technicians or medical technologists—are women. A few men also engage in this work. The medical laboratory technician makes chemical tests for diagnosis and treatment of diseases; makes blood and urine analyses; takes blood counts; makes biological skin tests; and makes analyses of stomach contents. She also prepares vaccines and slides for examination under the microscope.

In 1949 there were 14,500 registered medical laboratory technicians and as many more not registered. Examinations for certificates of qualification are conducted twice a year for graduates of approved schools.

All registered medical laboratory technicians observe a well-defined code of ethics. They agree to work at all times under the supervision of a qualified physician. They do not advise physicians in the treatment of a disease and do not make any diagnoses themselves. They do not operate independent laboratories, and when employed by a physician they do not accept work outside of that physician's practice. Two-thirds of the workers are in hospitals; others are in medical laboratories and public health departments. Average earnings vary from \$3300 to \$3400 annu-

ally without maintenance. In the Federal Government pay begins at \$2750.

More than 400 hospital schools in 30 states prepare students to become medical technicians. Two years of college work is the usual requirement for admission, and required training includes biology, bacteriology, chemistry, and physics. The American Medical Association, Chicago, lists approved schools. The American Society of Medical Technologists, 6544 Fannin Street, Houston 5, Texas, will also supply additional information.

**Dental technician.** The dental technician—also known as a “dental mechanic”—works in a laboratory where he makes artificial teeth from wax impressions supplied by a dentist. If you have ever cast small objects in plaster you will know something of the duties of the dental technician. He receives from the dentist a wax impression of the patient's teeth. With this piece of wax he makes plaster casts and builds up necessary parts so that the completed work—artificial teeth, inlays, castings, plates, bridges, or porcelain work—should fit exactly into the patient's mouth. The technician never sees the dentist's patient. The fitting is done entirely by the dentist.

The dental laboratory where the technician works may be owned and operated by a dentist, but more often the dentist sends his work out to be finished in an independent commercial laboratory which employs dental

technicians. There are now more than 5000 dental laboratories that employ nearly 24,000 dental technicians. About 1 out of every 10 dental technicians is a woman. Earnings in 1948 varied from \$200 to \$300 per month.

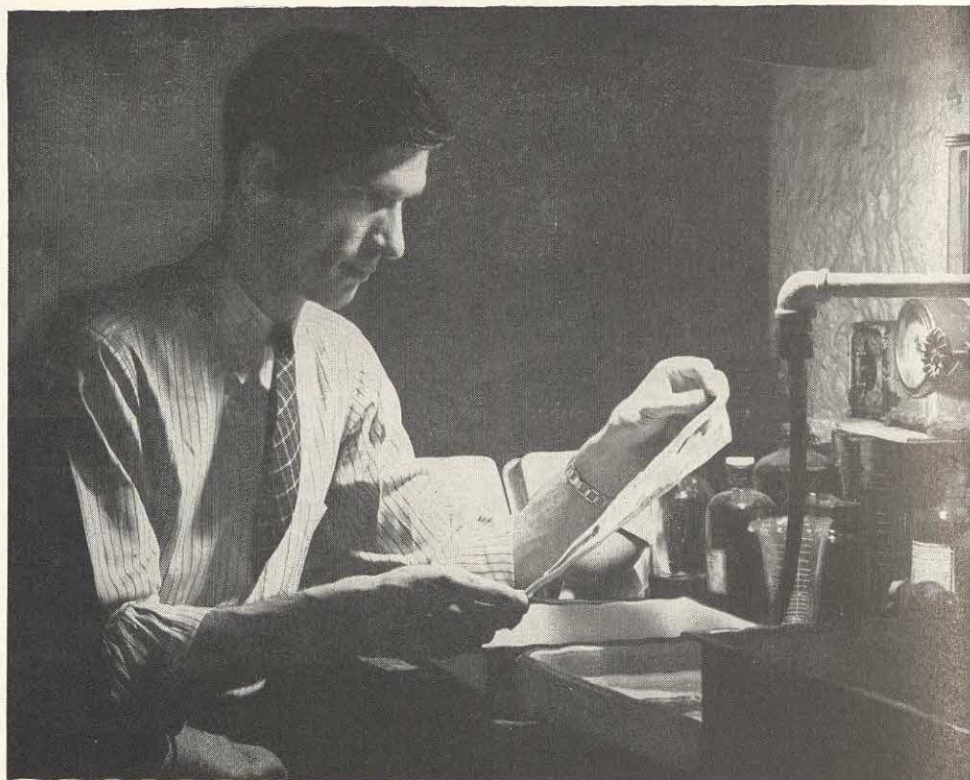
Dental technicians usually begin by pouring plaster models of teeth and polishing or finishing plates. They may then progress to rubber work, and finally to gold and porcelain work.

Good eyes, manual dexterity, mechanical ability, and attention to details are essential in this work. The usual method of training for this work is through four years of apprenticeship in a local dental laboratory. However, there are a number of laboratory schools, particularly in New York and Pennsylvania, that offer training for dental technicians. For further information about schools and qualifications write to the Dental Laboratories Institute of America, 7 South Dearborn Street, Chicago 3, Illinois.

### PHOTOGRAPHER (0-56)

A photograph is really a mechanical record of an image made on a film by the action of light. New types of cameras, light meters, flash bulbs, color films, and fine lenses now on the market have served to set standards never before reached in the photographic world. As an occupation, photography has already emerged from a craft to an accepted art. The skill of the





COURTESY U. S. CIVIL SERVICE COMMISSION

**Photographer (0-56).** As an occupation, photography has already emerged from a craft to an accepted art. This photographer, in a dark room, is developing films and printing pictures. Training for photography is not standardized but may be taken in a number of special schools or through apprenticeship.

photographer depends upon his choice of subject, angle of view, composition, balance, contrast, focusing, timing, developing, enlarging, retouching, and finishing.

Popular interest in producing attractive photographs increases each year, partly because of the nationwide contests and partly because of improved instruments. As a hobby, taking pictures indoors or outdoors appeals to young and old alike.

To earn a living at photography, a person must have a feeling for beauty, know how to make graceful arrangements of draperies, flowers, and objects, and learn how to use light, shadows, and color effectively. Many photographers specialize. Some concentrate on babies. Some use candid cameras for quick shots of weddings and social functions. Some go in for pictures of wildlife, using telephoto lenses for close-ups. Other spe-

cialties include television, aerial mapping, and X-ray work.

About 43,000 men and 9000 women work as photographers. Their salaries range from \$50 to \$100 per week. Preparation for becoming a photographer is not standardized. Some learn partly through attending a school of photography, and others find openings as apprentices in studios. The Photographers Association of America, 520 Caxton Building, Cleveland 15, Ohio, will supply further information about photographers.

**Portrait photographer.** Photographers who specialize in portraits work in studios. They take pictures of persons in public life, children, brides, graduates, and other clients. They also take their cameras and equipment to homes, banquet halls, and public gathering places to take special group pictures. It is customary to submit several "proofs" to the customer who selects the pictures he wants finished. The *darkroom man* receives exposed negatives and develops them in a dark room. The *retoucher* works on the negative to soften lines and improve the finished picture. The *printer* chooses the proper paper and prints the pictures, making either contact prints or enlargements.

The chief requirements for becoming a successful portrait photographer include ability to take good pictures and an opportunity to produce work that sells. The photographer

needs great patience and tact and a pleasing personality to get clients to pose naturally and at ease.

**Commercial photographer.** Commercial photographers find employment in the field of advertising and selling. They take pictures of people, models, fashions, merchandise, machinery, automobiles, and interiors for publicity purposes. Such pictures are widely distributed in magazine advertisements. In this work the photographer arranges backgrounds and lights, times exposures, and develops and prints the pictures. He may copyright some of his pictures for a small fee through the Copyright Office of the Library of Congress. The best opportunities for a commercial photographer are in the field of advertising or selling.

**News photographer.** During big games on the athletic field you have probably watched the cameraman taking pictures of the players and have been eager to see the results in the local newspaper. The news photographer takes pictures of all kinds of events of human interest for publication in newspapers and magazines. Such pictures are sent to the photoengraving department of the newspaper plant to be prepared for the printing press. Newspapers and magazines employ staff photographers and often supply their cameras.

News photographers earned around \$40 per week in 1947. Many enter this work by training on the job for 2 or 3 years.





FROM "ALL THE CHILDREN." COURTESY NEW YORK CITY BOARD OF EDUCATION

**A window trimmer (0-43)** arranges displays of store merchandise in show windows to attract the attention of passersby. This semiprofessional work is offered in classes of salesmanship and merchandising in large-city high schools and some colleges.

**DECORATOR (0-43)**

**Interior decorators (0-43)** plan the color schemes, furnishings, fabrics, and placement of furniture for the inside of homes, hotels, clubs, theaters, yachts, and other places. They make a sketch for the customer's approval of their plan for furniture arrangement, wall decorations, and color harmonies. The interior decorator estimates costs and materials, may purchase the furnishings, and supervises the work as it goes along. To be successful, a decorator must know something about color, architecture, design, drawing, period furnishings, and historical decorations. Some decorators work in department stores. Some own their own shops with stocks of draperies, pictures, lamps, and upholstery.

**Window trimmers (0-43)**, or persons who prepare displays in store windows, and those who do stage settings and sets for motion pictures are in the same code classification as decorators, 0-43.

Employment opportunities are good for well-trained decorators. Useful high school courses are those including such subjects as art, business, home furnishings, home management, fabrics and textiles, and mechanical drawing. College training is desirable and should be followed by training on the job with some well-established firm. Beginning jobs may pay from \$30 to \$40 per week, and higher salaries depend upon the individual, his clientele, and where he

locates. The American Institute of Decorators, 41 East 57th Street, New York 22, New York, can give further current details.

**COMMERCIAL ARTIST (0-44)**

The classification of "artist" within the professional group of occupations (see page 165) includes those artists in the fine arts who produce their works without the use of mechanical devices. The classification of "commercial artist" in the semiprofessional group includes those who use any means they choose to create pictures or interpret everyday objects through applied art.

For any form of art work, an artist must have ability to put on paper what he sees or wishes to visualize. Part of this ability is natural and part is learned. Any talent that a person has for art is bound to show up at an early age before high school. It is sure to become that person's hobby if not his career. Many persons who have no skill for drawing or painting nevertheless appreciate art work. They become the art dealers, auctioneers, appraisers, and restorers of art objects. In any community notice how business firms make good use of applied art by employing sign painters, advertising artists, job printers, and various decorators.

Commercial artists draw illustrations for advertising copy, books, magazines, catalogs, and newspapers. They apply their talents in art to posters, signboards, greeting cards,





COURTESY U. S. CIVIL SERVICE COMMISSION

**The commercial artist (0-44)** creates and designs figures to illustrate advertising copy, magazines and books, posters and billboards. This work is semiprofessional and does not require a college degree, but most commercial artists have had some art courses in college or at a private art school.

and show cards to promote the sale of goods and services through eye-appeal. Some artists prepare charts, diagrams, sketches, and maps for publication or exhibition. Others design labels for packaged goods to attract customers to buy a product. *Advertising artists* do advertising illustration lay-out, lettering, and poster art. *Illustrators* do work for books, magazines, newspapers, and decoration. The cartoonist who creates single cartoons and comic strips must not only have special ability to draw, but he must also be a keen observer of hu-

man nature and behavior. Art schools in the United States are listed and described in *The American Art Annual* which is available in public libraries.

### DESIGNER (0-46)

**Industrial designers (0-46)** are employed by large companies to create new models and new designs for a variety of products from automobiles, television cabinets, and furniture to household utensils and textiles. Such designers must produce

patterns with due regard to costs and utility as specified by the manufacturers. Commercial designers create patterns for fabrics, linoleum, and wallpaper. Others produce designs for rugs, banknotes, toys, jewelry, and stained-glass windows.

**Clothes designers (0-46)** are more often women, but a small number of men have won fame and fortune as designers of women's clothes, millinery, and jewelry. American women spend a great deal of money on fashions. In one recent year they spent more than 3 billion dollars on clothes and cosmetics. Fashion designers, or clothes designers, are successful in the degree that their dresses sell. A successful worker must be style-conscious and work where the styles are created. Clothes designers are employed in wholesale plants where dresses are manufactured. Department stores employ stylists who manage fashion shows. Fashion sketchers and illustrators find work with large department stores, magazines, advertising agencies, and pattern concerns. There are designers for men's clothing, for children's clothing, for costumes in motion-picture productions, and for furs.

#### **RADIO ANNOUNCER (0-69) AND RADIO OPERATOR (0-61)**

**Radio announcer (0-69).** Everybody knows the radio announcer, or the master of ceremonies on the radio programs. At times he only gives the commercials or the news; at other

times he may carry on the entire program. He introduces the performers and may read from prepared lines. After listening to several programs, try to analyze the duties and background of education and training which he must have had. A pleasing voice and good diction are two important requirements. In addition, an announcer must have a good command of English and a knowledge of dramatics, music, foreign language, current news, sports, and matters of cultural interest. Also important are a sense of humor, good judgment, and a quick reaction to any unexpected situation. For telecasting, personal appearance becomes a necessary requirement.

Nation-wide networks demand men of experience. This means that a beginner must find work in one of the many small stations. After 2 years in a small station, a beginner should know the various phases of broadcasting. There are 2300 broadcasting stations with 8000 announcers and program staff members, and the numbers of these workers will undoubtedly increase.

Full-time announcers in nation-wide networks earned an average of \$125 per week in 1948. Announcers in other stations with 15 or more employees receive an average of \$72 per week. The salary for announcers in smaller stations run about \$50 a week. Sometimes they also receive talent fees. Their workweek totals 40 to 42 hours, depending upon the size of the station. Promotion depends





BROOKS FROM MONKMEYER

**Clothes designer (0-46).** The fashion designer, or stylist, creates designs and prepares patterns for new types and styles of men's, women's, and children's wearing apparel. Sometimes the designer makes sketches and cuts out the drawings. Here the designers, using a living model, are creating a new style. This same dress will be in the market in a variety of colors at a moderate price once it has gone into mass production.

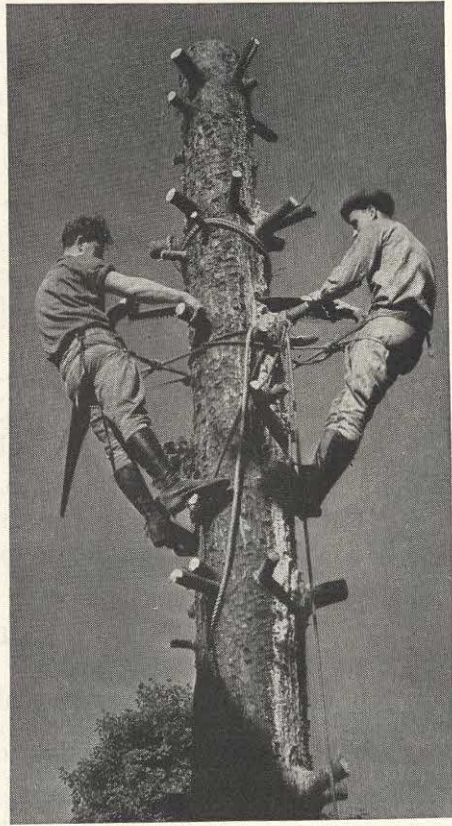


not only on background and experience but on ability to win favor with the unseen audience, as well. Personality, good nature, and tact determine the success of the announcer.

Preparation for the work of radio announcer usually includes study at a liberal arts college where one may study dramatics, music, and languages. One of the best means of training your own voice is through the wire recorder or tape recorder. By playing back the recording, you hear your own voice, recognize many faults, compare the voice with professional voices, and improve your voice by correcting the faults.

**Radio operator (0-61).** Those who are interested in the technical end of electronics may wish to consider becoming a radio-transmitter operator or a television operator. More than 15,000 operators are employed in radio and television. When the demand for television operators first became heavy, many radio operators who were highly skilled found new employment. A radio-transmitter operator must have a first-class radio-telephone license from the Federal Communications Commission.

The radio-transmitter operator controls the operation of transmitting equipment in a radio station—starts it, shuts it down, and adjusts the tone quality of a radio program. In doing this work, he listens to the programs through a loud speaker or headphones, watches the volume indicators, and keeps a complete log. For this work the pay may range



COURTESY DAVEY TREE SURGERY CO.

**Tree surgeons (0-68),** semiprofessional workers, cut the trunks of trees in sections to avoid damage to surrounding property. A few trade schools offer short courses for men interested in this outdoor occupation.

from \$59 to \$120 for a 42- to 44-hour week, depending upon the size of the station. Training may be obtained in a good technical school or in a college of engineering. Radio operators find many opportunities for employment in the broadcasting field but few opportunities in the telephone and telegraph industry. Additional information can be obtained from the local unions of radio operators.



**TREE SURGEON (0-68)**

The trees in our country are worth millions of dollars and must be protected and cared for scientifically. The occupation of tree surgeon appeals to the outdoor-minded and to those interested in living things. The work is for agile men capable of working high up in trees.

The tree surgeon not only preserves diseased and decaying trees, but he also prunes, buds, grafts, and sprays trees. He saws off dead limbs, treats rotted areas by scraping away the dead wood, and closes the holes

with cement or rubber. He may transplant large, full-grown trees by protecting the roots with a large ball of earth. He also has to cut down and remove entire trees without damaging property near them.

The tree surgeon learns his work through apprenticeship, by attending a school of tree surgery, or by enrolling in an agricultural college. Your local superintendent of parks and playgrounds or your state conservation department can give further information about the occupation of tree surgeon. The work is highly specialized and well paid.

**For Discussion**

1. Who are the semiprofessional workers?
2. Name several hobbies that could lead to semiprofessional jobs.
3. What does a draftsman do?
4. What code of ethics do medical laboratory technicians observe?
5. What does a dental technician do?
6. Name several branches of work that a photographer might enter.
7. What is the difference between commercial art and fine art?
8. Name some opportunities for a commercial artist.
9. What preparation should a radio announcer have?
10. What type of person should become a tree surgeon?

**What to Read****AVIATOR:**

*Educational Guide to Air Transportation*, Ralph E. Hinkel and Leo Baron. Transcontinental and Western Air, Inc., Kansas City, 1944. 140 p.

## CHIROPODIST:

*Chiropodist*. Michigan Unemployment Compensation Commission, Detroit, 1948. 13 p.

*Chiropody as a Career*, Wilfred E. Belleau. Park Publishing House, Milwaukee, 1947. 29 p.

## COMMERCIAL ARTIST:

*Careers in Cartooning*, Lawrence Lariar. Dodd, Mead & Company, Inc., New York, 1949. 182 p.

*Careers in Commercial Art*, J. E. Biegeleisen. E. P. Dutton & Co., Inc., New York, 1952. 255 p.

*How to Make Money in Commercial Art*, Ethel Brosnac. Dodd, Mead & Company, Inc., New York, 1948. 222 p.

## DENTAL ASSISTANT:

*Physicians' and Dentists' Assistants*. Women's Bureau Bulletin 203-11. U.S. Government Printing Office, Washington 25, D.C., 1946. 15 p. (10 cents)

## DENTAL HYGIENIST:

*Smart Young Women Are Choosing Dental Hygiene as a Career*. Ray A. Miller. Fairleigh Dickinson College Press, Rutherford, N.J., 1953. 66 p.

## DENTAL TECHNICIAN:

*Dental Technician*. Michigan Unemployment Compensation Commission, Detroit, 1948. 11 p.

## DESIGNER:

*Costume Design*, Kay Hardy. McGraw-Hill Book Company, Inc., New York, 1948. 277 p.

*Keys to a Fashion Career*, Bernice G. Chambers, editor. McGraw-Hill Book Company, Inc., New York, 1946. 234 p.

*Careers in the World of Fashion*. Frieda S. Curtis. The Woman's Press, New York, 1953. 268 p.

## DRAFTSMAN:

*Draftsman*. H. Alan Robinson. Personnel Services, Inc., Peapack, N.J., 1951. 6 p.

## INTERIOR DECORATOR:

*Opportunities in Interior Decoration*, Suzanne Conn. Vocational Guidance Manuals, Inc., New York, 1947. 57 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern semiprofessional occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	What kind of training and qualifications does a commercial artist need?
<b>BUSINESS:</b>	What phases of a business course do semiprofessional workers need?
<b>ENGLISH:</b>	How can English training be applied to the needs of athletes, dancers, designers, photographers, showmen, and other semiprofessional workers?
<b>HEALTH:</b>	Discuss any semiprofession related to health work—laboratory technician, laboratory assistant, chiropodist, or other.
<b>HOME ECONOMICS:</b>	Show the value of a knowledge of interior decoration, a semiprofession, to the homemaker.
<b>LANGUAGES:</b>	How can a semiprofessional worker profit by a knowledge of a modern language?
<b>MATHEMATICS:</b>	Learn how to make geometric designs as required of many semiprofessional workers.
<b>MUSIC:</b>	Demonstrate different forms of dance music. (Dancers are semiprofessional workers.)
<b>OCCUPATIONS:</b>	Make an individual report on one semiprofession established in your community.
<b>SCIENCE:</b>	Show why a photographer needs to know about the elements of light as given in a physics course.
<b>SHOPWORK:</b>	Discuss one semiprofessional worker who needs skills at bench work.
<b>SOCIAL STUDIES:</b>	Show the importance of a study of history to any one of the following semiprofessional workers: designer, photographer, showman, or surveyor.

## LABORATORY TECHNICIAN:

*Medical Laboratory Technicians.* Women's Bureau Bulletin 203-4. U.S. Government Printing Office, Washington 25, D.C., 1945. 10 p. (10 cents)

*The Registry of Medical Technologists.* Registrar, Registry of Medical Technologists, Ball Memorial Hospital, Muncie, Ind. (Annually). 27 p.

## MORTICIAN:

*Morticians.* Michigan Unemployment Compensation Commission, Detroit, 1949. 12 p.

## OPTOMETRIST:

*Optometrist.* Michigan Unemployment Compensation Commission, Detroit, 1948. 17 p.

*Optometry.* American Optometric Association, Inc., Minneapolis, 1944. 21 p. (Free)

## PHOTOGRAPHER:

*Careers in Photography,* C. B. Neblette. Rochester Institute of Technology, Rochester, N.Y., 1953. 28 p.

## SCIENTIST:

*The Outlook for Women in Occupations Related to Science.* Women's Bureau Bulletin 223-8. U.S. Government Printing Office, Washington 25, D.C., 1948. 33 p. (15 cents)

*Your Opportunities in Science.* National Association of Manufacturers, 14 W. 49 St., New York 20, 1952. 30 p. (Free)

## X-RAY TECHNICIAN:

*X-Ray Technicians.* Women's Bureau Bulletin 203-8. U.S. Government Printing Office, Washington 25, D.C., 1945. 14 p. (10 cents)



## CHAPTER 13 THE ADMINISTRATIVE OCCUPATIONS

Long before such words as "administration," "business," or "management" were heard of, man exchanged goods with his neighbor. Whatever these goods might have been—fish, game, wild fruits—the exchange was a "barter." As bartering grew in volume, men bought goods to sell again. Thus it became necessary to provide some generally accepted measure of value, and so money came into being. When money became the medium of exchange, the buying and selling of goods became known as "commerce" or "business."

**Development of business.** The ancient Phoenicians developed commerce and business on the Mediterranean seacoast. They bought tin from England, mixed it with copper from Spain, and sold the resulting bronze to merchants at many seaports. During the Middle Ages, as markets grew, certain cities became famed for special types of goods, such as woolen cloth, milk, glass, or hardware. Certain streets in these cities were devoted to wholesalers, just as they are today. These cities would also put on fairs for commercial purposes. Today we would call these

fairs "annual markets for wholesale trade."

One hundred years ago all businesses were relatively small, and they were usually managed and operated by the owner and members of his family. Since 1900, because of great strides made in communication, transportation, and administration, certain small businesses have developed into sprawling industries. Efficient management of these industries has produced goods in such quantities that they can be sold at very reasonable prices. Thus, in our time, a great variety of goods from all parts of the world can be purchased right in our own communities. All this progress has required good administration by farsighted managers.

Today, business and industry are managed by men and women in a wide variety of managerial and official occupations. A sampling of these administrative jobs is given on page 203. Each occupation listed, however, represents quite a number of similar related occupations.

For example, "0-71 Hotel and restaurant managers" represents caterers, maitres d'hotel, managers of cafeterias and coffee shops, or travel-

ing managers. All of these managers and officials are responsible for policy-making, planning, supervising, and guiding the work activities of others—whether it be in stores, offices, on ships, or on trains. Every day, as a customer, you buy from stores managed by such workers—grocery stores, variety shops, shoe stores, filling stations, drug stores, florists, jewelry stores, etc. Some are small shops, managed and operated by the owner alone. Some are chain stores with branch managers, and others are large department stores with many officials. Then there are the manufacturing plants with various managers

and department heads who direct the production of goods for sale.

The Bureau of the Census has estimated that there are nearly 6 million managers and officials. Approximately half of these workers own their own businesses and are in retail trade. One in every ten of the managers and officials are in manufacturing. The remainder are in wholesale trade, government work, finance, insurance, and real estate.

**Managing your own business.** You may have an urge to be your own boss, especially if you are among the leaders in your community and in school activities. Those who manage

### MANAGERIAL AND OFFICIAL OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 0-71 Hotel and restaurant managers
- 0-72 Retail managers\*
- 0-73 Wholesale managers\*
- 0-74 Buyers and department heads, stores
- 0-75 Floormen and floor managers, stores
- 0-79 Inspectors, managerial and official
- 0-81 Advertising agents\*
- 0-83 Officials of lodges, societies, unions, etc.
- 0-85 Credit men
- 0-87 Managers and superintendents, buildings
- 0-88 Ship captains, mates, pilots, and engineers
- 0-91 Purchasing agents and buyers
- 0-92 Conductors, railroad
- 0-94 Public officials
- 0-95 Inspectors, public service
- 0-97 } Managers and officials, miscellaneous (including presidents, vice presidents, sec-
- 0-98 } retaries, treasurers; managers of industrial organizations, production, sales and
- 0-99 } distribution, service establishments, etc.; officials in radio programming, motion
- } pictures, banking,\* finance, insurance, etc.; and contractors)

\* Occupation discussed in this chapter.



a business of their own successfully feel more independent, can apply their own ideas, and usually can make more money than people who work for a salary. However, the owner of a business assumes more responsibility, has more worries on and off the job, and takes more risks with his own money. Before undertaking a business of your own, you must make plans far ahead. You need to gain experience in some business as an employee in order to understand business problems as they arise and be able to handle them properly.

Among first considerations would be the location of your business. This requires study. Certain streets of your town are centers for some particular line of goods, and a number of stores within walking distance of each other sell the same type of merchandise—shoes, clothing, musical instruments, jewelry, etc. Drug stores or tobacco stores are on important corners. These stores didn't just happen to be established there. Their location was chosen carefully after a study of the situation, including a count of the number of persons who pass the corner daily.

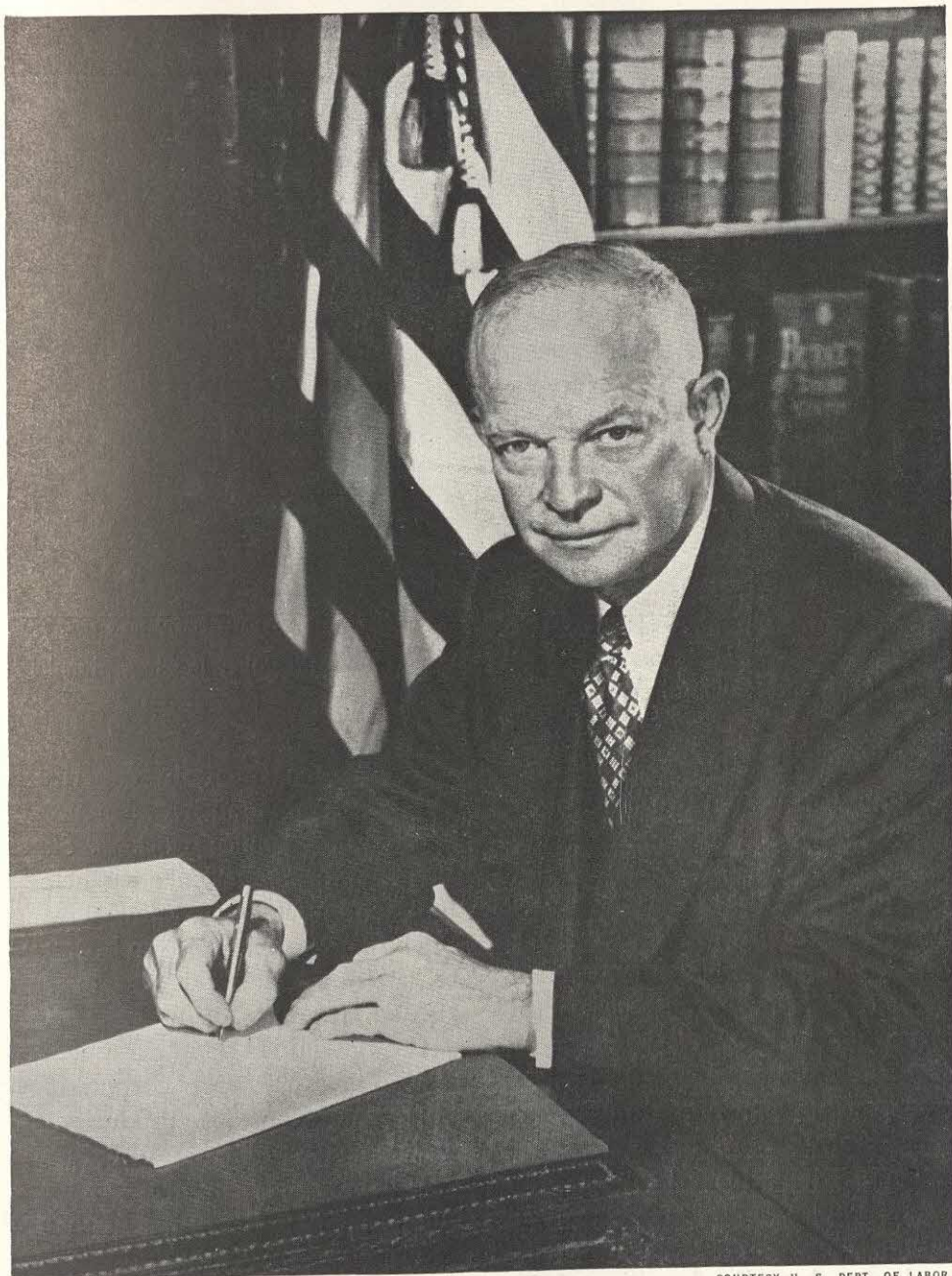
In addition to a good location, a manager looks for a space that will provide a suitable lay-out for his business. He aims to keep the appearance of his store clean and attractive inside and out.

A manager must obtain the proper licenses to open his business. Such permits vary from city to city. Generally they include a license or per-

mit from the health department for sanitation, one for general business, one from the weights-and-measures office to show that the scales register correct weight, and one for handling special goods, such as food or tobacco.

To open a business of his own, a person must have a certain amount of money. Available capital (money) may determine the success or failure of the venture. For a store doing a volume of business of \$800 weekly, the National Association of Food Chains estimates these amounts as necessary for capital: equipment, \$1500; inventory merchandise, \$2000; and operating capital, \$500. Such a business would only provide a bare living, but it might be a stepping stone to a larger business.

Finally, a word of caution is necessary for those considering a business of their own: Everybody cannot operate a store. People who think that anybody can operate a store have not been observant of the many failures in small enterprises. Every year thousands of hopeful but inexperienced people draw money from the bank, borrow additional funds, rent a store, stock it with goods, and try to make a living. Many fail. Small stores go out of business too frequently. A third of the grocery stores, a fourth of the shoe stores, and a fifth of the drug stores quit business every year because the managers lack experience, capital, or ability to attract customers. Only managers who plan well survive.



COURTESY U. S. DEPT. OF LABOR

**All presidents (0-97)** are administrators—whether president of a business organization or President of the United States. As administrators, presidents direct policies, preside over a Board of Directors (or the Cabinet), and otherwise represent the firm (or the Administration). The top administrator in this group is, of course, the President of the United States.





COURTESY "BUSINESS WEEK," PHOTO BY R. ISEAR

**Executive (0-97).** Managers and officials are responsible for policy making, planning, supervising, and guiding the work activities of others.

**Duties of a manager.** Administrative positions require men and women who are able to determine business policy, plan business activities, and direct the work of others. Whether a man owns and operates his own small business or is president of a large corporation, he is classified as a "manager" or "official." Both types must make policies, plan activities, check profits, and direct the work of any employee that they hire.

Many people think that all administrators are executives of big corporations and that they are all college graduates. Actually, 3 million of the people in this group are managers of their own businesses, and perhaps four out of five of them have never attended college. Many of the managers who own their own businesses

learned management by experience as clerks, salesmen, craftsmen, accountants, or office workers. Some form of work experience has helped many proprietors to know how to stock their stores, where to buy, how to satisfy people, and how to gain regular customers.

College-trained people are needed as managers in large corporations, however, because their duties include the handling of problems that require a broader knowledge of economics and labor conditions than is required in small businesses.

In the hotel industry, a hotel manager directs the operation of a hotel and organizes and manages the different departments—housekeeping, laundry, dining room, front office, and others. He decides what each de-

partment should do, employs the workers, and has them trained. He may determine room rates. The hotel manager buys supplies and equipment needed, directs the advertising, rents office space, and in general maintains good public relations.

The duties of a manager will vary from one industry to another and even within the same industry. However, in any business or industry the "manager" is the person to whom both employers and customers look for the last word in settling problems of the business.

**What it takes to be a manager.** Students do not leave school or college and jump immediately into administrative work. They usually gain experience by working in different departments of an industry or business to learn the practical, everyday side of the work. They must be able to get along with other employees and be willing to do a little more work than is actually required. A manager-to-be will find that his hours are likely to be longer than those of the other employees. He creates ideas on how to eliminate waste and increase business, and he learns how to direct his assistants to carry out these ideas. To be successful, a manager must learn to delegate work to others so that the business will run smoothly even in his absence.

Business ability is of first importance to a business official or manager. He begins to learn business methods as soon as he learns to swap toys. He continues to learn business



COURTESY U. S. CIVIL SERVICE COMMISSION

**Administrative assistant (0-97).** In many offices administrative assistants relieve executives of much of the detail concerned with office management.

principles in school when he participates in school activities and in his study of mathematics, history, and business courses. Any work experience during free time contributes to his business ability. College and university courses increase his knowledge of business administration. A future administrator may specialize in management, public administration, money and banking, personnel work, industrial relations, insurance, merchandising, traffic management, marketing, and other subjects. Employers in industry look with favor upon college graduates who have been trained in management because business methods and organization



have become so complex that trained men and women are needed to handle the work.

On the other hand, many men who have opened small businesses of their own after finishing public school have become efficient and successful managers. From on-the-job training some have increased their own businesses, and others have become managers or officials in larger enterprises owned by someone else.

Managers need practical experience working with employees in order to understand labor problems, initiate new ideas, and improve old methods. In emergencies, they must

be able to show control, calmness, and level-headedness. They must keep confidential matters confidential. To accomplish all these things, they must be able to express themselves clearly in both speaking and writing.

Nobody can predict with any certainty who would or would not make a good manager. However, there are certain qualities that you should possess as a student and additional qualities that you must cultivate if you hope to become a manager, either in business for yourself or for someone else. Such qualities are listed briefly below.

### QUALIFICATIONS OF A GOOD MANAGER

#### As a student:

- Planning and preparing for work
- Budgeting time
- Taking part in extracurricular activities
- Taking part in student meetings and voting
- Voicing opinion in discussions
- Holding office in school, church, or community activities
- Winning confidence of others
- Being friendly, tactful, and even-tempered
- Cultivating acceptable personal habits
- Helping others to settle their problems
- Bargaining for a good trade
- Holding part-time and vacation jobs
- Keeping careful accounts

#### As a worker:

- Willing to work without watching the clock
- Willing to work in business to gain experience
- Willing to spend time learning new and better business methods
- Willing to learn the cost and value of sales stock

#### As a manager (of own business):

- Able to secure at least half of the capital necessary to start
- Able to limit the personal "take" (money) out of the business

**RETAIL MANAGER (0-72)**

The old trading post in early frontier days supplied goods that people were not able to make for themselves. Later these trading posts developed into general stores that stocked everything from calico to groceries. As communities grew, people demanded more variety and better goods; so specialty shops and department stores developed.

Today, of the million and a half retail stores, 24 percent specialize in foods, 14 percent have general merchandise, 13 percent sell automotive products, 8 percent are eating and drinking places, 8 percent are wearing apparel shops, and 33 percent handle miscellaneous merchandise.

The retailer sells directly to the consumer—that is, the person who uses the goods and does not resell them. Everywhere, thousands of small retail stores are managed by one person who runs his own store as manager, clerk, and office boy. In such cases, the manager, or owner, has no personnel problems because he has no helpers.

The retail manager directs the operation of a retail store and is responsible for its profitable operation. He supervises the workers, who sell the goods or maintain the store. He makes reports, purchases goods, handles the receipts, and promotes sales. The responsibilities of managers vary greatly between large and small stores. Likewise, income and hours will vary according to the type of



COURTESY PENNSYLVANIA RAILROAD

**The passenger-car conductor (0-92)** is captain of the train. He directs the activities of the train crew during a trip, collects tickets, and turns in a report at the end of each run.

store, its location, or the efficiency of the manager.

Large department stores have as many as 50 different divisions, each requiring a manager or a buyer for special lines of merchandise. For example, there may be a merchandise manager in charge of several department managers, or there may be a manager for the ladies' wear department, the shoe department, the men's wear department, etc. In a small store, any one of these mana-





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

Every animal slaughtered in a meat-packing plant is inspected by a federal **meat-and-dairy inspector (0-95)**. All meat that is passed bears his blue stamp of approval.

gers might be the general manager, president, or owner. As in all such administrative positions, only workers of experience are appointed—usually by promotion from positions as buyers, assistants, or salespersons. Those who learn the details of a business from the ground up are best fitted to carry out established policies and to manage in such a way as to make profits for the concern.

Many public schools offer work-experience programs by which a student works in a local store or shop half time, for school credit, and at-

tends school half time. (See page 98.) Experience in employment is necessary to become a manager.

### **WHOLESALE MANAGER (0-73)**

The wholesaler buys goods in large quantities, often in carload lots, and stores them in a warehouse ready for delivery to retailers. He sells the goods to retail merchants, who in turn sell the goods in small lots to consumers. Large manufacturers sell at wholesale through their branch offices, middlemen, or brokers.

The manager of a wholesale firm directs the business. His line of goods may be a varied one, such as dry groceries of all kinds; or he may handle a limited line of meats, tobacco, clothing, coal, coffee, confectioneries, flowers, fruits, papers, or other merchandise. Whether it is for a grain elevator or a wholesale grocery store, the wholesale manager estimates what the firm will need and purchases the stock. Whatever his line, he must know quality, price, and demand. When the goods have been delivered, he sees that they are assembled for convenient handling and instructs his traveling salesmen concerning their sale and price to retailers. His duties also include estimating the credit rating of customers, advising them about market conditions, and suggesting the proper time to stock certain goods. Many assistants help the wholesale manager in his work—office workers, stockmen, buyers, packers, shippers, deliverymen, and salesmen.

The wholesale manager must have experience in order to know the markets, be familiar with his stock and needs, and estimate the buying power of his customers. A good manager must also estimate future prices to know when to buy and when not to buy in quantity.

There is no special training for wholesaling other than training on the job. A wholesale manager often works his way up from salesman. Experienced workers in the wholesale trade become managers only after

they have learned the practical side of the business through office work or selling experience. However, special academic training in management and finance is always an advantage.

### **BANK CASHIER (0-98)**

Bankers first appeared in 1171 in Venice, Italy, and later in Florence, Italy, where most of the trade of Europe was handled. The early Italian money dealer worked at a "banco," or bench, from which comes our word "bank."

Today, in the United States about 15,000 banks of all types deal in the exchange of money—national banks, state banks, private banks, savings banks, industrial banks, and Federal Reserve banks. In every city, bank officials manage one or more banks.

The bank cashier acts as executive officer of a bank and administers policies formulated by the board of directors. He supervises all subordinate officers and manages the bank. There are few other official positions in a bank, but all of them demand men of experience who can attract business and win the confidence of customers through sound judgment in money matters. Men hold most of the executive jobs in banks. Appointment as bank cashier or other official requires long experience, generally beginning with routine clerical work.

A bank cashier learns his work by beginning as a bank clerk. A bank



clerk learns to work rapidly and accurately with figures, but even the most experienced bank clerks seldom reach a level higher than that of bank teller (1-06). The teller is not an official but a clerical worker who deals with customers at the bank window where he receives and pays out money. During World War II many women entered employment as tellers in bank cages where only men had been employed before. There are about 35,000 men and 28,000 women bank tellers.

There is no special requirement for young men and women to enter banking. Banking is only for those who like highly detailed work. Many learn on the job. Pay is moderate for beginners. Local chapters of the American Institute of Banking offer banking courses, after banking hours, for ambitious employees. Colleges and universities also offer courses in banking, finance, economics, and commercial law. But usually many years of actual experience in banking are necessary before one becomes a bank cashier or other bank official.

### **ADVERTISING AGENT (0-81)**

In businesses where the advertising is handled by one individual, the advertising man plans, writes, lays out, proofreads, and keeps records of the effectiveness of newspaper and direct-mail advertising. Advertising agencies, newspapers, radio and television stations, retailers, and manufacturers also hire advertising men.

Advertising agencies hire workers to plan advertising campaigns, estimate costs, secure space in newspapers and magazines or time on radio and television, and lay out advertisements. Newspapers and magazines employ advertising agents to sell advertising space. A full-page advertisement in a popular magazine may cost several thousand dollars. Radio and television advertising agents must have a technical knowledge of broadcasting and may write script and choose music. Retailers may employ advertising men to work in cooperation with the store buyers and managers in preparing advertising campaigns, advertising posters, car ads, and direct-mail advertising. These advertising men may also direct the preparation of copy and pictures for lay-outs (sketches of ads as they will appear), have charge of window displays, and make arrangements for fashion shows. Manufacturers employ advertising agents to work with their sales officials on plans to boost sales and promote good will. Such agents often have charge of large advertising expenditures and make intensive studies of advertising trends.

Most advertising men are assisted by commercial artists, copy writers, photographers, and other persons with creative ability. The advertising man studies not only the markets, stores, and products but also the purchasing power of the people, their living standards, and their habits.

Most advertising men receive high salaries. Administrative positions are

likely to go to college graduates with majors in business administration, English, or advertising. Experience in selling helps a person in advertising to understand people and their

buying habits. Beginners often accept on-the-job training or clerical jobs in advertising departments or advertising agencies to learn the practical end of the work.

### For Discussion

1. Explain how business developed from barter to management.
2. Who are the managers and officials?
3. What type of person can most successfully manage a business of his own?
4. What preparation does a manager need?
5. Explain whether you would rather be a manager or a clerk in a store.
6. Explain the statement: "A retailer sells directly to the consumer."
7. Explain the statement: "A wholesaler never sells directly to the consumer."
8. How can a student learn retailing through work-experience programs?
9. How did we get our word "bank"?
10. What does an advertising man do?

### What to Read

The following Small Business Series of bulletins issued by the U.S. Department of Commerce may be obtained from the U.S. Government Printing Office, Washington 25, D.C.

#### *Establishing and Operating—*

- No. 16 *Metal Working Shop*. 1945. 202 p. (35 cents)
- 17 *Shoe Repair Business*. 1945. 189 p. (35 cents)
- 19 *Your Own Business*. 1945. 30 p. (10 cents)
- 20 *Small Sawmill Business*. 1945. 154 p. (35 cents)
- 21 *Grocery Store*. 1946. 375 p. (55 cents)



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern managers and officials.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	How can a manager or official profit by studying design in the packaging of manufactured products?
<b>BUSINESS:</b>	What business courses in high school are most useful to a person who makes business management a career? Is college training necessary?
<b>ENGLISH:</b>	Find a manager's printed report of some business, and edit it so as to improve the English and readability.
<b>HEALTH:</b>	How do administrators and officials keep in good physical condition?
<b>HOME ECONOMICS:</b>	Arrange a panel discussion on the following topic: A Good Homemaker Uses As Much Managerial Ability in Running Her Home As a Man Does in Managing a Business.
<b>LANGUAGES:</b>	Name some foreign products that are now manufactured or assembled in this country under branch management.
<b>MATHEMATICS:</b>	Interpret to the class a graph of business conditions as published in some current magazine.
<b>MUSIC:</b>	Tell in what way the duties and qualifications of a manager of a band or orchestra differ from those of the players.
<b>OCCUPATIONS:</b>	Invite the manager of a local firm to talk to your class about operating a business.
<b>SCIENCE:</b>	Tell about the organization and management of a chemical plant.
<b>SHOPWORK:</b>	What are the possibilities of a shopworker's becoming the manager of a plant?
<b>SOCIAL STUDIES:</b>	Discuss prominent men in your town who have built up industry or managed local government.

- No. 22 *Service Station*. 1945. 198 p. (35 cents)  
24 *Automobile Repair Shop*. 1946. 141 p. (35 cents)  
25 *Beauty Shop*. 1945. 135 p. (30 cents)  
26 *Real Estate and Insurance Brokerage Business*. 1946. 137 p. (30 cents)  
27 *Painting and Decorating Contracting Business*. 1946. 116 p. (25 cents)  
  
28 *Electrical Appliance and Radio Shop*. 1946. 199 p. (35 cents)  
29 *Retail Bakery*. 1946. 176 p. (35 cents)  
31 *Hardware Store*. 1946. 204 p. (35 cents)  
32 *Apparel Store*. 1946. 269 p. (40 cents)  
33 *Dry Cleaning Business*. 1946. 210 p. (35 cents)  
  
34 *Retail Shoe Store*. 1946. 180 p. (35 cents)  
35 *Variety and General Merchandise Store*. 1946. 256 p. (45 cents)  
36 *Heating and Plumbing Business*. 1946. 139 p. (30 cents)  
37 *Laundry*. 1946. 213 p. (40 cents)  
39 *Restaurant*. 1946. 287 p. (45 cents)  
  
41 *Bookkeeping Service*. 1946. 51 p. (15 cents)  
42 *Book Store*. 1946. 35 p. (10 cents)  
43 *Weekly Newspaper*. 1946. 52 p. (15 cents)  
44 *Stationery and Office-supply Store*. 1946. 30 p. (10 cents)  
45 *Retail Food and Farm Supply Store*. 1946. 38 p. (15 cents)  
  
46 *A Mail Order Business*. 1946. 113 p. (25 cents)  
47 *Small Woodworking Shop*. 1946. 44 p. (15 cents)  
48 *Confectionery-Tobacco Store*. 1946. 53 p. (15 cents)  
49 *Manufacturing Brick and Tile*. 1946. 59 p. (15 cents)  
50 *Year-round Motor Court*. 1946. 125 p. (25 cents)  
  
51 *Paint, Glass, and Wallpaper Store*. 1946. 59 p. (15 cents)  
52 *Trucking Business*. 1946. 71 p. (20 cents)  
53 *Gift and Art Shop*. 1946. 49 p. (15 cents)  
54 *Sporting Goods Store*. 1946. 48 p. (15 cents)  
55 *Jewelry Store*. 1946. 42 p. (15 cents)



- No. 56 *Small Print Shop*. 1946. 52 p. (15 cents)  
57 *Music Store*. 1946. 83 p. (20 cents)  
58 *Automatic Merchandising Business*. 1946. 41 p. (15 cents)  
59 *Air Conditioning and Refrigeration Business*. 1946. 84 p.  
(20 cents)  
63 *An Aviation Business*. 1946. 236 p. (40 cents)  
79 *A Flower Shop*. 1948. 47 p. (15 cents)

## CHAPTER I4 THE OFFICE OCCUPATIONS

**O**ppportunity knocks loudly at the doors of people trained for office work. In government, industry, business, and professions there is a constant need for clerical workers and office help. Even the smallest business must have someone to keep the records and accounts.

**The need for office workers.** Both business and governmental organizations have grown so complex that many types of records must be kept for efficient management. More records are required in business than ever before, in order to keep a check on the condition of stock, sales, profits, losses, and personnel. And all record-keeping requires clerks, typists, stenographers, machine operators, and others to do the work.

The need for office workers has also increased because of the many records necessary in connection with reports on social security, income taxes, and other government-sponsored activities.

Although salaries for clerical workers have increased, the demand for clerical workers has grown steadily since World War II because of the increased volume of business. The number of office workers has in-

creased more rapidly in recent years than the number of workers in any other major occupational group. Over 6 million office workers are now employed as clerical workers, and the demand for clerical workers will probably increase for some years to come. At present about one out of every eight persons in the entire labor force is a clerical worker. The variety of work that is done in the clerical field may be estimated by scanning the list on page 218. Each of the office occupations listed represents more than one job. For example, "1-01 Bookkeeper" covers such jobs as budget clerk, accounting clerk, audit clerk, balance clerk, cost clerk, entry clerk, inventory clerk, posting clerk, social-security clerk, and others. Each of these jobs has a different 5-digit code number, which is not shown here; the first three digits of the code (1-01) are the same for all of these jobs, since they are all a type of bookkeeping.

Men and women employed as clerks in large or small offices throughout the nation are concerned with preparing, transferring, and filing written communications and records. There are about two women



## CLERICAL AND KINDRED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

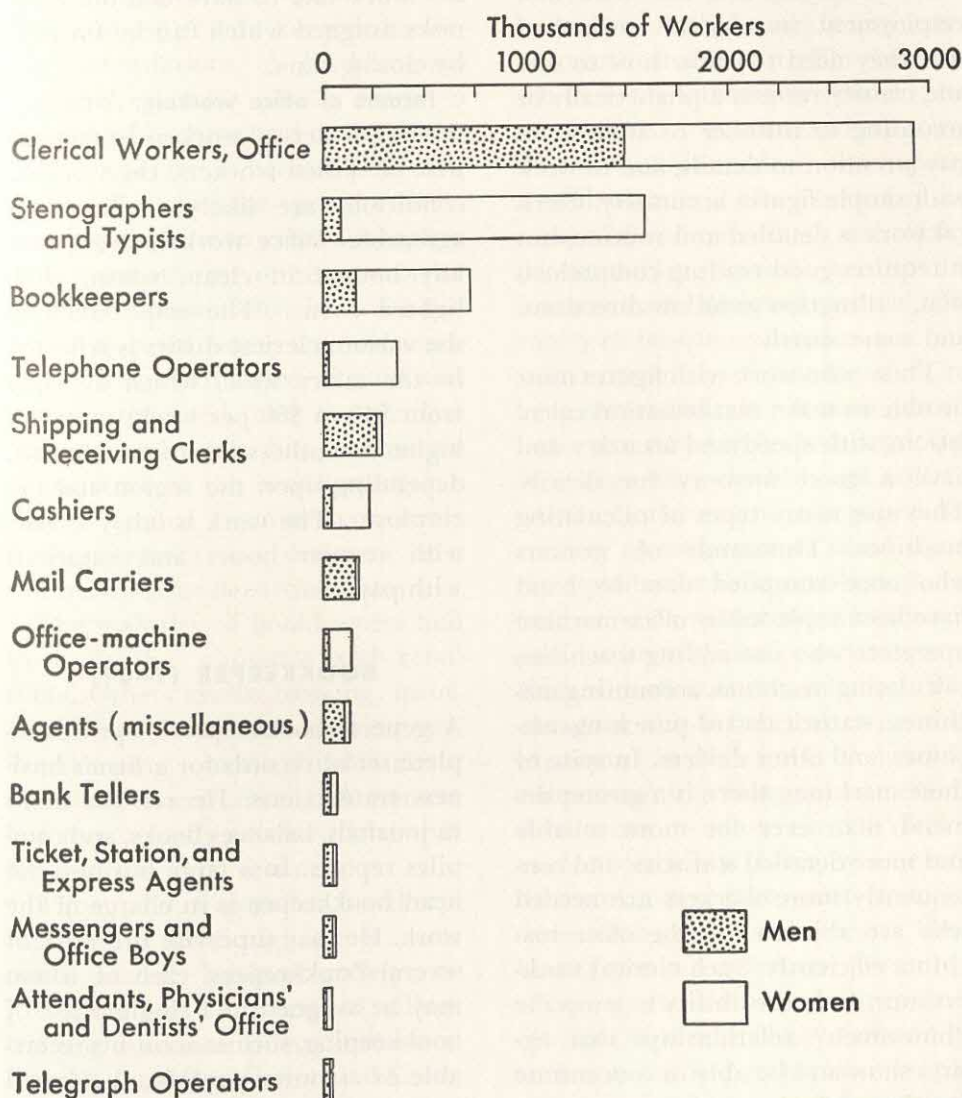
- 1-01 Bookkeepers and cashiers, except bank cashiers\*
- 1-02 Bookkeeping machine operators\*
- 1-03 Checkers\*
- 1-04 Clerks, general
- 1-05 Clerks, general office
- 1-06 Financial institution clerks\*
- 1-07 Hotel clerks\*
- 1-08 Insurance clerks
- 1-10 Printing and publishing clerks
- 1-11 Transportation clerks
- 1-12 Clerks in trade\*
- 1-15 Collectors, bills and accounts\*
- 1-16 Correspondence clerks
- 1-17 File clerks\*
- 1-18 } General industry clerks\*
- 1-19 }
- 1-20 Library assistants and attendants\*
- 1-23 Messengers, errand boys, and office boys and girls\*
- 1-24 Telegraph messengers\*
- 1-25 Office machine operators\*
- 1-26 Paymasters, pay-roll clerks, and timekeepers
- 1-27 Post Office clerks
- 1-28 Mail carriers
- 1-31 Express messengers and railway mail clerks
- 1-32 Physicians' and dentists' assistants and attendants
- 1-33 Secretaries\*
- 1-34 Shipping and receiving clerks\*
- 1-35 Technical clerks
- 1-36 Statistical clerks and compilers
- 1-37 Stenographers and typists\*
- 1-38 Stock clerk\*
- 1-41 Telegraph operators
- 1-42 Telephone operators\*
- 1-43 Baggage men, transportation
- 1-44 Ticket, station, and express agents, transportation
- 1-45 Weighers
- 1-48 Agents and appraisers

\* Occupation discussed in this chapter.

to every man engaged in office or clerical occupations. However, only 6 percent of all employed men enter clerical work, while 27 percent of all employed women are in some kind of

office work. At least three-fifths of all clerical workers are under 35 years of age. This means that clerical and office work is essentially an occupation for active young people. Prob-

### MAJOR CLERICAL OCCUPATIONS



SOURCE: 1950 CENSUS DATA

Many women will find jobs in some kind of clerical work.



bly half of the girls who read this book will be more interested in the office occupations than in any other single field of work.

**General qualifications for office workers.** First jobs in clerical work require little training or experience. Many teen-agers who take their first employment in clerical work find that they need to know how to sort and classify records alphabetically or according to number or subject, to pay attention to details, and to work with simple figures accurately. Clerical work is detailed and routine, but it requires good reading comprehension, willingness to follow directions, and some speed.

Those who work with figures must be able to make mathematical calculations with speed and accuracy and have a good memory for details. They use many types of calculating machines. Thousands of workers who once compiled data by hand have been replaced by office-machine operators who use adding machines, calculating machines, accounting machines, statistical-card-punching machines, and other devices. In spite of these machines, there is a greater demand than ever for more reliable and more detailed statistics, and consequently more workers are needed who are able to use the office machines efficiently. Such clerical workers must have the ability to grasp the "how-much" relationships that figures show and be able to concentrate in a busy office.

Those in recording work, such as

typing, must be good at spelling, punctuation, grammar, and English usage. They need, particularly, good reading habits, memory for detail, clear handwriting, and finger dexterity. They must like desk work. Those temperamentally suited to office work like to have definite daily tasks assigned which can be finished by closing time.

**Income of office workers.** Although the pay of clerical workers is less than that of skilled workers, the working conditions are likely to be more agreeable. Office workers are generally housed in clean, warm, well-lighted rooms. The importance of the various clerical duties is reflected in the salary scale, which averages from \$30 to \$50 per week; some are higher and others are lower than this, depending upon the region and the employer. The work is fairly secure, with regular hours and vacations with pay.

### BOOKKEEPER (1-01)

A general bookkeeper keeps a complete set of records for a firm's business transactions. He records items in journals, balances books, and compiles reports. In a large business the head bookkeeper is in charge of the work. He may supervise the work of several bookkeepers, each of whom may be assigned to a single phase of bookkeeping, such as accounts receivable or accounts payable. In a small business a bookkeeper may record and post items by hand. Few book-

keepers today are responsible for a complete set of books because bookkeeping functions are now broken down so that they may be handled by office-machine operators and clerks.

In a large business bookkeeping is done on machines, which may be simple to use or very complex involving computations. A *bookkeeping-machine operator* (1-02) needs to know bookkeeping and typing in order to operate a bookkeeping machine. The operator uses the bookkeeping machine to enter a complete and systematic set of records of all business transactions in loose-leaf books, to print names and addresses, to list items purchased or sold and services rendered, and to calculate amounts and totals. For an example of the work of the bookkeeping-machine operator examine a monthly bank statement to a depositor or a bill from a large department store.

The majority of bookkeepers find work in the wholesale and retail trade. Others are in banking, insurance, transportation, utilities, etc. Bookkeeping jobs are divided about equally between men and women, but men usually receive higher pay for the same type of work.

Those who prepare for bookkeeping need to finish high school, vocational school, business college, or junior college. Four years of college training is not considered necessary. The National Association and Council of Business Schools, 2601 Sixteenth Street NW., Washington 9,

D. C., will supply a list of approved business colleges.

### FILE CLERK (1-17)

A letter misplaced is a letter lost. Business firms, therefore, regard their files as a highly important means of locating quickly any letter or record of the past. The business offices in any industry or concern preserve official incoming and outgoing letters, records, orders, and reports in well-organized files where they are preserved for immediate use. Many patented filing systems are on the market, each designed to add efficiency to business procedures.

It is the duty of the file clerk to keep letters and other records in such order that they can be found quickly. In a large office the file clerk will do nothing but sort and file papers according to some system based upon the alphabet or code numbers. Some find the work monotonous because it calls for little initiative to sort quantities of cards and papers by number. However, this is one way of gaining experience in office work. To become a supervisor in a filing department, it is necessary to know the file clerk's work thoroughly. Girls who enter this work often take great pride in maintaining good and efficient files. Young men often find the job an excellent way to learn the business and see how it works. They frequently have access to important business papers or confidential information. Therefore, the job of file clerk may



serve as a stepping stone to other work in business.

File clerks must have nimble fingers, good reading comprehension, ability to follow instructions, and a liking for this type of detailed work. In the Federal Government file clerks begin at \$2500 a year. They need very little, if any, direct training for the work. Little skill is required, and many learn on the job. Commercial departments of the public schools and most private business schools include office practice and filing with their business courses, and some employers require applicants to have certificates showing such training.

#### **TYPIST, TRANSCRIBING- MACHINE OPERATOR, STENOGRAPHER (1-37)**

**Typist (1-37).** Firms that distribute large numbers of circular letters, catalogs, and reports employ many typists to get materials ready for the printer. Most business records and letters are typewritten, and usually several carbon copies of each letter are made for different files.

Typists are not required to know shorthand. A typist uses the typewriter to write letters, address envelopes, copy manuscripts from rough draft, make statistical tables, fill in report forms, and copy data from one record to another. She also makes stencils to be used in the duplicating machine when many copies are desired. Much of such work is straight

copy, either from rough draft or from a corrected copy. A typist does not take dictation.

Typing involves very detailed work. Learning to handle detail accurately in a routine job is good training for anyone, no matter what job he may have later. All business jobs in offices are detailed and routine. The personal traits needed by typists include interest in desk work, manual and finger dexterity for typing, ability to sort and classify records for filing, attention to details, good reading comprehension, and speed.

A beginning typist should use the touch system and be able to write on the typewriter accurately at a speed of at least 40 words per minute, but experienced typists are required to type 60 words per minute. Business firms demand accuracy. It is better to write at a moderate speed with few errors than to increase errors by rapid typing. Using the touch system makes for the greatest speed with the least effort and saves eyestrain and fatigue.

A good typist earns less than a good stenographer. Typists in government service receive higher rates of pay than typists in industry, usually beginning at \$2750 a year. Public schools and private business schools in many cities offer adequate courses in typing. Those who finish such courses successfully are generally assured of a job.

**Transcribing-machine operator (1-37).** The transcribing machine op-

erator types out on the typewriter what has been recorded on such machines as the Dictaphone, Ediphone, Soundscriber, magnetic tape recorders, and wire recorders. After the employer has dictated into one of these machines, the recording is sent to the operator. The operator plays it back on a machine at her desk. The operator listens—generally through earphones—and types out the dictation on the typewriter as she hears it.

**Stenographer (1-37).** In addition to having the qualifications and skills of a typist, the stenographer knows shorthand. Shorthand is a method of writing in which single strokes represent the sounds of the language. The single strokes are joined together in combinations that form words and phrases. The most prevalent systems of shorthand today are the Gregg and Pitman systems. These systems are written with a pencil or a pen in a stenographic notebook.

Some stenographers use machine shorthand, using the Stenotype or the Stenograph. As the stenographer presses the keys on the machine, the dictation is recorded on a roll of tape.

The stenographer takes dictation in shorthand and transcribes her notes on the typewriter. She needs to be familiar with the technical language of her employer and, if necessary, correct his errors in English and grammar. Stenographers are in constant demand by lawyers, doctors, businessmen, and authors. They may

work in stores, factories, courts, newspaper offices, government offices, or business offices.

Stenographers, typists, and secretaries number more than a million and a half, of whom the majority (94 percent) are women. Over 88,000 men are employed as stenographers in finance, insurance, and real-estate companies, and as court reporters. Nearly three-fifths of these workers are employed in the states where large cities are located—New York, Illinois, Pennsylvania, California, Ohio, New Jersey, Massachusetts, and Michigan.

The turn-over among stenographers is high because many leave their jobs for personal convenience, to get married, or to take better positions. A good stenographer will always find work in any part of the United States, but a poorly trained stenographer may have difficulty. Pay in large cities ranges from \$40 to \$60 a week. Government jobs, obtained through Civil Service, pay \$2950 a year to start, and court stenographers in the government service begin at \$3795.

Public schools in many cities teach shorthand and typing as a part of their commercial courses. Many employers accept stenographers who have had no further training than that offered in the public schools. Some high school students continue their training in a local private business school. A standard stenographic course consists of 36 weeks (810 clock hours) in shorthand, typewriting,





FROM THE MCGRAW-HILL FILMSTRIP "SECRETARIAL COOPERATION"

A **stenographer** (1-37) takes dictation and transcribes it on the typewriter, while a **typist** (1-37) does only typing. A **secretary** (1-33) is a stenographer who takes some responsibility in assisting her employer with correspondence and other office duties.



COURTESY REMINGTON RAND



COURTESY "BUSINESS WEEK," PHOTO BY R. ISEAR

In small offices a girl may have a job combining the duties of a receptionist, typist, stenographer, and secretary.



English, spelling, filing and indexing, and office-machine operation.

### **SECRETARY (1-33)**

A secretary, or secretarial stenographer, relieves an executive of a large amount of detail work by handling business matters that do not require the employer's attention. A secretary qualifies, not only as a stenographer, but also as a confidential clerk. Most secretaries are women.

A secretary must be intelligent, efficient, loyal, and well educated to carry out the duties expected of her. Such duties are more than taking dictation and transcribing notes. She must carry out orders, make appointments, meet visitors, answer the telephone, attend to personal accounts of the employer, take care of correspondence, and possibly supervise other clerical workers in the office. Some secretaries specialize in particular kinds of work—such as legal, medical, social.

Young people who are ambitious frequently find secretarial work and stenography an entering wedge for better jobs in the business. Secretaries learn a great deal about the administrative side of a business as conducted through the manager's office. If they are alert, they observe business transactions and methods and capitalize on such observations by applying this knowledge on the job they are holding at the time or on another job when one is available.

Secretarial work pays better than

stenographic work, but it must be remembered that some stenographers, and even typists, are called "secretaries" by courtesy and not according to duties or training.

Public schools, local commercial schools, and certain colleges offer training in secretarial work. High school graduation provides a necessary background for further business training. A standard secretarial course, as approved by the National Association and Council of Business Schools, covers 48 weeks and includes shorthand, typewriting, secretarial accounting, business mathematics, English, spelling, filing, office-machine operation, and secretarial duties and functions. Graduates are required to make the following speeds: shorthand, 100 wpm (words per minute); typewriting, 50 wpm; and transcription, 25 wpm.

### **OFFICE-MACHINE OPERATORS (1-25)**

Office machines and machine operators make possible the handling of the large volume of business transacted in industry today. Modern machines have replaced thousands of old-time office jobs, and yet these same machines have created new jobs because they require well-trained operators to run them.

Working conditions for operators of office machines vary markedly. If the machines run quietly and do not distract desk workers, the operators may work in the general office. Op-

erators of heavy, noisy machines usually work by themselves away from the main office in a "service section." Operators will find the work more routine in large offices than in small places of business where machine operation is only one of a variety of duties. The 1950 Census showed 25,000 men and 117,000 women working as office-machine operators.

**Simple machines.** Some office machines are in such common use and so simple in operation that training is not necessary. Any intelligent person can use the telephone, cash register, simple adding machine, envelope feeder and sealer, stamping machine, and other small machines that are found in all offices.

**Duplicating machines.** Some duplicating-machine operators need a short training period before they can make clear copies of letters and records. The *addressing-machine operator* (1-25) prints addresses on envelopes and letters by using special stencils in an automatic machine. A *duplicating-machine operator* (1-25) turns out hundreds of copies of letters by using stencil machines, such as the Mimeograph; gelatin-surface machines, such as the Hectograph and Ditto; and machines that print from movable type, such as the Multigraph. The operator is usually known by the trade name of the machine that he operates, as Mimeograph operator, Ditto operator, etc. A *microfilm operator* (1-25), who usually works in libraries and large business concerns, makes photo-

graphic copies of whole newspapers, books, letters, and records on films, which replace the voluminous files of the past. The material may be read back by projecting the film on a special enlarger or on a screen. Large department stores now use this method for keeping a record of customers' charge accounts.

**Calculating machines.** High-speed calculating machines add, subtract, multiply, and divide rapidly, at the will of the operator, and show totals in the window of the machine. A few machines print the numbers on strips of paper. Such machines speed office work in solving mathematical problems. A *calculating-machine operator* (1-25) uses a keyboard machine to figure accounts, percentages, interest, discounts, and rates that would require considerable time by hand. The operator needs a high degree of skill but can generally learn to use a machine after attending a company school for about 300 clock hours. The calculators are known by several trade names and the manufacturers usually maintain the schools for training operators on their special machines. A *billing-machine operator* (1-25) works in a large store preparing regular bills for customers. She should be a good typist and good at arithmetic. It takes about 10 weeks to learn the operation of this combination machine.

**Tabulating machines.** Herman Hollerith invented the tabulating machine, and it was first used in compiling the United States Census for





COURTESY U. S. CIVIL SERVICE COMMISSION

**A duplicating-machine operator (1-25)** fastens a stencil in a mimeograph machine and produces hundreds of copies in a very few minutes. The stencil is previously cut by a typist. Ink is forced through the cuts in the stencil, making the copy on paper.



COURTESY U. S. DEPT. OF AGRICULTURE

**A microfilm-camera operator (1-25)** photographs a 1000-page book, and each page of microfilm will be no larger than your thumbnail, yet it may be read easily when projected on a screen. Large department stores now keep customers' records in this manner to save valuable filing space. During World War II letters from servicemen abroad were microfilmed because that way they took up little space.

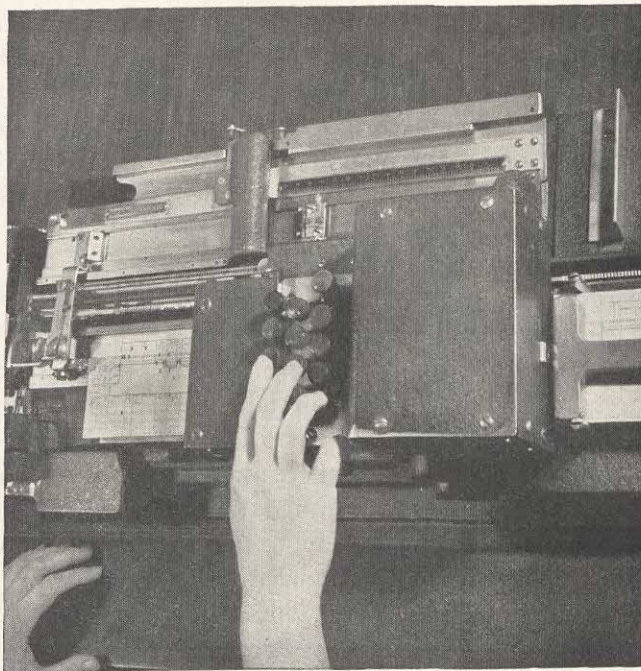
## OPERATORS

**A tabulating-machine operator (1-25)** operates a machine that automatically analyzes, makes calculations, and translates information represented by holes punched in special cards. The operator places a stack of cards in the machine, the machine does the rest, and out comes a printed table. The U. S. Census figures are tabulated on these machines.



COURTESY INTERNATIONAL BUSINESS MACHINES CORP.

**The key-punch operator (1-25)** uses a machine to transfer statistical data to stiff tabulating cards. Note the holes punched on the card. Each hole represents a figure from a written record.



COURTESY U. S. GOVERNMENT PRINTING OFFICE



1890. Since then many improvements have been made in this heavy equipment. Large industries, such as railroads, bus lines, and manufacturing plants, use these machines in making up pay rolls, determining costs of labor and materials, and accounting for personnel, property, and inventories. The kinds of tabulations with which we are now familiar would be impossible without these high-speed tabulating machines.

The tabulating machines used in the U. S. Census Bureau summarize data into tables in a relatively short time. For every individual in the United States, a card is punched showing the data collected by the enumerators. These 150 million cards go to the sorter machine. The sorter divides the cards into 48 state groups and counts each group. The first group, for example, consisting of cards for everyone in the state of Alabama, is again sorted by sex to find out how many men and women live in Alabama. The same is done with the cards for every other state. The cards are thus sorted and counted for many items. Finally, for each item an accounting machine prints a row of resulting figures across a sheet of paper in tabular form.

Many of these machines are manufactured by the International Business Machines Corporation, and are therefore known as "IBM machines." The IBM Corporation rents the machines to customers but does not sell them. The customer sends an em-

ployee to the "customer training school" to learn how to operate the machines that he rents. The course of 4 weeks covers training in the operation of six types of machines necessary for tabulating work. A *key-punch operator (1-25)* uses a simple key-punch machine to record data on a card by punching holes in the card according to a pattern. This is a simple process learned in a short time. Most key-punch operators are girls. A *tabulating operator (1-25)* knows how to run six machines—a key-punch machine, for punching cards; a sorter, for grouping and counting cards; a collator, for selecting cards; a reproducer, for copying a punched card; an interpreter, for printing on a card the meaning of the punched holes; and an accounting machine, which makes the printed table showing the results of the various counts. The tabulating operator must have a keen interest in statistics and statistical methods. The jobs are divided about equally between men and women.

### OTHER CLERICAL WORKERS

Office work is not all machine operation. Thousands of office managers (see Chapter 13) engage clerical workers to make records by hand, check goods, handle money and mail, issue and receive materials, give information, fill orders, and act as agents.

Some of these jobs are described briefly below. A certain amount of

training and experience is necessary to qualify for some of these jobs, but many can be learned on the job if a person has the right personal qualifications. Most clerical workers have assigned tasks to do in offices with other workers. For that reason office workers must know how to follow detailed directions, be willing to do the job at hand, and have the ability to get along well with people. The duties of these jobs are the same day in and day out.

The occupations listed below are well-known jobs but often represent only one occupation in a larger group of similar jobs.

*A bank teller (1-06)*, one of the "financial institution clerks," receives and pays out money in banks and keeps records of customers' accounts.

*A cashier (1-01)* may work in a restaurant, a drug store, a theater, or a retail establishment. She keeps records of cash transactions, makes change, counts money, and reads cash registers.

*A checker (1-03)* works in a bank, a restaurant, a transportation company, and in various other businesses. A checker may check food, traffic, or stock, examine the work of other persons for accuracy, or compare goods with the order sheets of customers.

*A collector (1-15)* makes collections from customers on installment accounts or overdue bills and sometimes makes arrangements for later payments.

*A general industry clerk (1-18; 1-19)* in a large office may be a mail clerk, personnel clerk, receptionist, order clerk, or any one of an office staff who makes up and files reports, posts data in record books, takes telephone orders, checks cash registers, gives information, or mails bills.

*A librarian assistant (1-20)* helps the librarian in checking outgoing and incoming books and replaces library books in their proper places on the shelves.

*A mail clerk (1-18)* is one of the "general industry clerks." He opens, sorts, and stamps the time on incoming mail and prepares letters and packages for mailing.

*A marker (1-12)* is one of the "clerks in trade" in a department store. He prints the price of merchandise on tags and attaches the tags to the articles for sale.

*An office boy (1-23)* is one of the group of "messengers." He has minor duties of a routine unskilled nature that he performs in a business office.

*A receptionist (1-18)* is one of the "general industry clerks." The receptionist receives customers and visitors in an office, finds out their wants, and directs them or makes appointments for them.

*A room clerk (1-07)* is one of the "hotel clerks." He registers and assigns rooms to incoming guests, checks out those departing, gives information, checks valuables, and distributes hotel mail.

*A shipping clerk (1-34)* is one of a score or more of workers who han-





COURTESY MAYFLOWER HOTEL, WASHINGTON, D. C.

**The hotel clerk (1-07)** is a busy man. He meets and greets many people, and he must use considerable tact in registering guests and assigning them rooms.

dle shipments of goods—delivery clerk, receiving clerk, router, shipping checker, etc. The shipping clerk learns methods of packing goods for shipment; understands shipping procedures, practices, routes, and rates; and assembles and ships goods according to customers' instructions. He also keeps records for pricing the goods and billing the customer.

*A stock clerk (1-38)* has various duties according to the type of business where he is employed. He receives, stores, and issues goods or

tools in a stockroom and keeps careful records of such transactions.

*A telegraph messenger (1-24)* delivers telegrams and does errands, often by bicycle.

*A telephone operator (1-42)* operates a switchboard to relay messages to various phones, either in a telephone office or on an office switchboard. The telephone company trains its own operators and will explain the work, through its employment office, to any interested persons.

A *timekeeper* (1-26), or time clerk, keeps a daily record of the exact time each employee arrives and leaves

work. The time clerk computes total time worked as a basis for making up the company's pay roll.

### For Discussion

1. Why are so many more office workers needed today than in the past?
2. Who are the office workers?
3. What percentage of men and of women office workers are under 30 years of age?
4. What qualities do employers look for in office workers?
5. What are the duties of a file clerk?
6. Explain the difference between (a) a typist and a stenographer; (b) a stenographer and a secretary.
7. Name some office machines that (a) require well-trained operators; (b) do not require trained operators.
8. If you could handle either kind of work, which would you prefer: a job in a clean, warm office at low pay or a job at a bench in an open factory at high pay?
9. Why are girls more interested in office jobs than in many other types of work?
10. What qualifications do employers look for in a secretary?
11. Name some clerical workers who do not work in offices.

### What to Read

- Careers in Business for Women*, D. Smedley and L. Robinson. E. P. Dutton & Co., Inc., New York, 1945. 224 p.
- Clerical Occupations*, L. Schloerb and L. Medsker. Science Research Associates, Chicago, 1947. 50 p.
- Job Descriptions for Office Occupations*, War Manpower Commission. U.S. Government Printing Office, Washington 25, D.C., 1945. 204 p. (\$1.25)
- Key-punch Operators*. Michigan Unemployment Compensation Commission, Detroit, 1949. 13 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern office occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Why is it an advantage for a typist or a stenographer to have a good sense of design and proportion? Try blocking out a short letter on letter-size paper to show balance and proportion.
<b>BUSINESS:</b>	To what extent does your school prepare and recommend students for employment in office jobs?
<b>ENGLISH:</b>	Mention important rules in punctuation that writers of business letters should know.
<b>HEALTH:</b>	Discuss "sick leave" for office workers as a feature of government jobs.
<b>HOME ECONOMICS:</b>	In what ways does a homemaker use office procedures in paying bills, shopping, planning work and menus, and otherwise operating a home?
<b>LANGUAGES:</b>	What types of employers might select a stenographer because she knew a foreign language?
<b>MATHEMATICS:</b>	In what types of office occupations are "percentage" and "business arithmetic" necessary tools of the trade?
<b>MUSIC:</b>	Why do so many office workers form music clubs, glee clubs, and orchestras after office hours and in their spare time?
<b>OCCUPATIONS:</b>	What particular qualifications and preparation do office workers need?
<b>SCIENCE:</b>	Discuss the values of scientific lighting or air conditioning in buildings that house office workers.
<b>SHOPWORK:</b>	Discuss repair of office machines as an occupation.
<b>SOCIAL STUDIES:</b>	What advantage should a stenographer find in reading a newspaper daily?

*The Outlook for Women in Mathematics and Statistics.* Women's Bureau Bulletin 223-4. U.S. Government Printing Office, Washington 25, D.C., 1948. 21 p. (10 cents)

*Secretaries Who Succeed*, Esther R. Becker. Harper & Brothers, New York, 1947. 121 p.

*Secretaryship as a Career*, E. G. Purvis. National Council of Business Schools, Washington, D.C., 1944. 23 p. (Free)

*Stenographic Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1949. 26 p.

*Typing Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1949. 23 p.



## CHAPTER 15 THE SELLING OCCUPATIONS

Everyone has something to sell. Farmers, manufacturers, and other producers must sell their goods at a profit. Professional men and women must sell their services. Theaters sell entertainment; railroads sell transportation; telephone companies sell communication; colleges sell education; and other agents and agencies sell ideas which are neither goods nor services. Ideas are just as salable as goods. A debater tries to sell his arguments to the audience. An advertising agent uses ideas to sell something to the public, even though this is not a person-to-person approach. An applicant for a job must sell his services to an employer. So, with all productive work, selling is the factor that makes for success. In dealing with other people, selling is important to everyone in all occupations, in social life, and in every other capacity.

Those who are employed as salesmen may be grouped or classified in many ways. The grouping shown on page 238 is standard and will give an idea of the kinds of salesmen that there are.

Each of these titles includes many different types of salesmen who sell

many kinds of products and services, yet all of the salesmen listed under any one title do work that is in some way similar. For example, "1-75 Salespersons" covers those who sell wearing apparel (corsets, furs, millinery, men's and boys' clothing, shoes, women's garments, and yard goods); automotive and marine equipment (automobile accessories and parts, and marine supplies); farm and garden equipment; household goods; music, etc. "1-85, 1-86, 1-87 Salesmen and sales agents, except to consumers" represent the wholesale salesmen who sell large quantities of goods or products to retailers, who in turn sell to the consumers. Three code numbers are necessary for this title because there are so many types of wholesale salesmen.

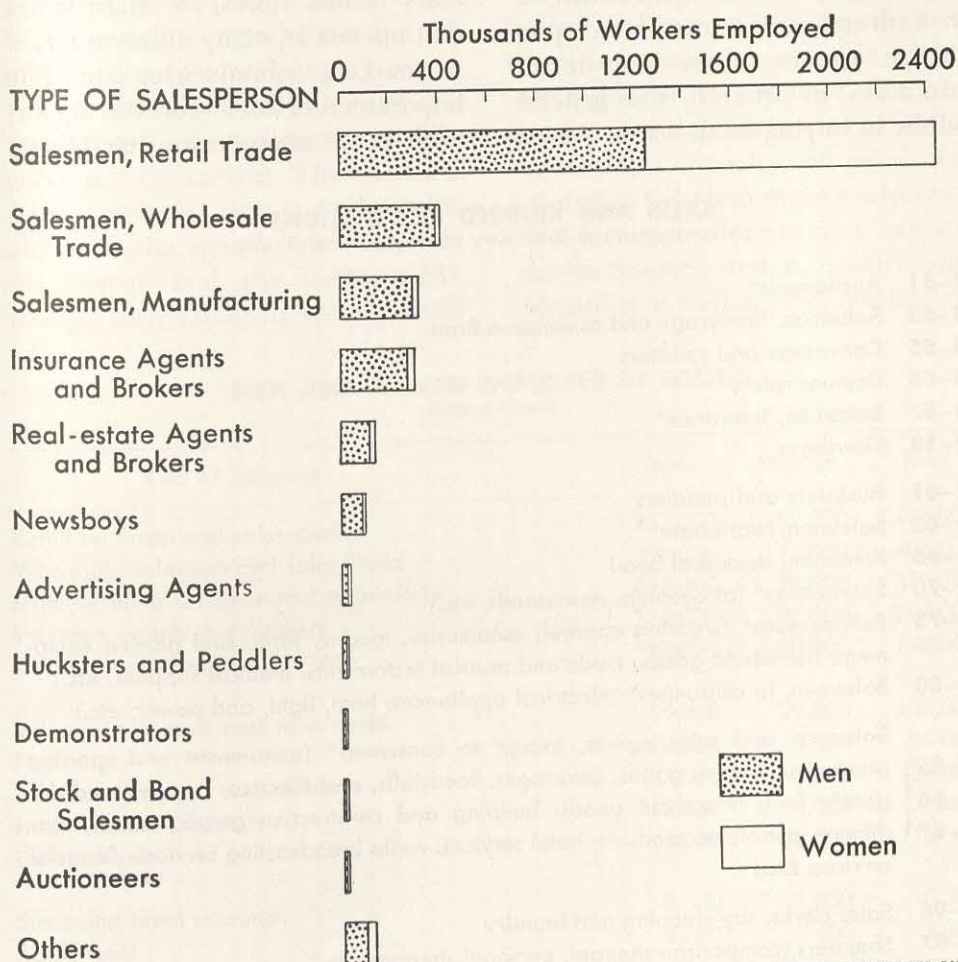
Close to 4 million persons are engaged in sales work in this country—2,596,000 men and 1,329,000 women. An examination of the figures on employed salespeople will show which types of sales work offer more opportunities for men and which for women. (See the table on page 239.) The largest number of men are (1) retail salesmen, (2) wholesale salesmen, (3) manufactur-

ing salesmen, (4) insurance salesmen, and (5) real-estate agents. The largest number of women are sales clerks in stores.

Types of salesmen vary from the dime-store clerk—"1-75 Salespersons" (general, unspecialized)—and the house-to-house doorbell ringer—"1-55 Canvassers and solicitors"

(house-to-house)—to the men who may sell only one piece of heavy machinery a year—"1-86 Salesmen and sales agents" (textile machinery). Both men and women sell goods, investments, advertising, real estate, and services. Such persons have sales ability, but their jobs vary with the types of customers they cater to and

### MAJOR SALES OCCUPATIONS



SOURCE: 1950 CENSUS DATA

More men and women go into retail selling than into any other selling occupation.



with the methods they use. In order to sell scientific instruments, chemical products, or engineering equipment, salesmen need professional training so as to present their merchandise intelligently to interested customers. Salesmen who sell luxury products in high-class stores to well-to-do customers need refinement of voice and appearance to attract trade. Others who sell low-priced articles on the street, by door-to-door canvass, or in cash-and-carry stores need persuasive powers rather than much education to interest the general public in buying small wares. Yet all

salesmen have the same objective—to sell something to a customer and make a profit.

**Retail salesmen.** Most people know the retail salesman better than any other kind of salesman. The retail salesman sells goods and services directly to the consumer, and for that reason the customer is likely to think of the salesman as the store.

Retail salesmen work in independently owned stores, in chain stores that operate in many different cities, in markets, commissaries, etc. The importance of such stores as opportunities for salespersons may be un-

### SALES AND KINDRED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 1-51 Auctioneers\*
- 1-52 Salesmen, brokerage and commission firms
- 1-55 Canvassers and solicitors
- 1-56 Demonstrators
- 1-57 Salesmen, insurance\*
- 1-58 Newsboys
  
- 1-61 Hucksters and peddlers
- 1-63 Salesmen, real estate\*
- 1-65 Salesmen, stock and bond
- 1-70 Sales clerks\* (at counters, newsstands, etc.)
- 1-75 Salespersons\* (wearing apparel; automotive, marine, farm, and garden equipment; household goods; music and musical instruments; medical supplies; etc.)
- 1-80 Salesmen, to consumers\* (electrical appliances; heat, light, and power; etc.)
  
- Salesmen and sales agents, except to consumers\* (amusement and sporting goods; automotive goods; beverages, foodstuffs, and tobacco; apparel and dry
- 1-85 } goods; fuel; household goods; building and construction goods; metals; ma-
- 1-86 } chinery; petroleum products; hotel services; radio broadcasting services; financial
- 1-87 } services; etc.)
  
- 1-96 Sales clerks, dry cleaning and laundry
- 1-97 Shoppers (comparison shopper, personal shopper, etc.)

\* Occupation discussed in this chapter.

derstood by studying the figures in the table on page 240. Although the figures given below the heading "Number of Employees" includes *all* employees in the stores listed, most of these employees are salespersons. Thousands of new salespersons find employment in retail stores each year, and those looking for retail selling jobs should have little difficulty in finding work.

Selling behind the counter varies with the type of retail store. For example, dime stores employ many young, inexperienced girls to sell goods displayed on the counter. The goods sell themselves. The customer selects an item, gives it to the salesgirl with the money, and waits for his change and the package. Although such salesgirls receive small

pay and have little chance of advancement, they gain experience that is valuable for any future selling work they might later engage in. Salespersons in a department store, who generally sell "over the counter," must be alert to help the customer find and select goods needed, show personal interest in his buying problems, and help him compare goods and values.

Another type of retail sales work is called "selling on the floor." In a furniture store, for example, goods are displayed on the floor. If a customer does not know just what he wants, the floor salesman takes him around to help him make a selection. The furniture salesman must explain woods, finishes, design, quality, and durability as well as price. Such sales-

### MEN AND WOMEN EMPLOYED IN SELLING (1950 Census)

<i>Kind of Salesman</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Retail salesmen and sales clerks	1,253,000	1,192,000	2,445,000
Wholesale salesmen and sales clerks	391,000	15,000	406,000
Manufacturing salesmen and sales clerks	298,000	22,000	320,000
Insurance agents and brokers	278,000	25,000	304,000
Real-estate agents and brokers	120,000	20,000	140,000
Industrial salesmen and sales clerks	99,000	29,000	128,000
Newsboys	92,000	3,000	96,000
Advertising agents and salesmen	27,000	4,000	32,000
Hucksters and peddlers	18,000	3,000	21,000
Demonstrators	2,000	10,000	13,000
Stock and bond salesmen	9,000	1,000	10,000
Auctioneers	4,000	400	5,000
<b>Total salesmen and sales clerks</b>	<b>2,596,786</b>	<b>1,329,724</b>	<b>3,926,510</b>





COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

A sales clerk, groceries (1-70) in a small store takes phone orders, waits on the trade, totals the bill, and receives payment. In a self-service store (no salesmen) a **grocery checker** (1-03), or clerical worker, totals the bill.

men take a personal interest in the customer's needs in order to make a satisfactory sale.

Selling goods is only a small part

of retail selling. The classified section of the telephone directory lists many individuals and firms that sell *services* rather than goods to consumers.

### RETAIL STORES AND EMPLOYEES<sup>1</sup>

Type of store	Number of Stores	Number of Employees*
Single unit stores (no branch stores)	1,607,000	4,588,000
Multi-unit stores (chain stores, etc.) with:		
2 to 10 branch stores	82,000	888,000
11 to 50 branch stores	25,000	389,000
50 and more branch stores	55,000	1,053,000

\* All employees on pay roll, full-time and part-time. <sup>1</sup> From the Census of Business, 1948.



EWING GALLOWAY

**The jewelry salesperson (1-75)** sells ready-made jewelry. Employers usually prefer women to men for this work because of their good taste and their understanding of the customer's needs.

Although these workers do not sell a product, they all depend upon sales of a service to stay in business: advertising men, carpenters, cleaners, contractors, dancing instructors, exterminators, laundrymen, movers, music teachers, shoe repairers, storage men, telephone agents, transportation agents, truckers, etc.

Some salesmen do not come in personal contact with their clients but depend upon other means to make sales. A sales-service man in a firm does not meet his customers but promotes sales and creates good will for

the firm's products by preparing displays, attending retail conventions, and advertising. A salesman who services vending and coin machines never sees the buyers who drop coins in slots to get gum and candy, yet he installs machines on a profit basis, collects the money, and refills the machines.

Certain salesmen are required to obtain city licenses. Those who sell goods on the street—newsboys, peanut and popcorn venders, ice cream men, peddlers—must be licensed.

In general, retail salespersons meet



all kinds of consumers, indoors and outdoors, and sell all kinds of goods and services. The turn-over in personnel among those in retail selling is large. Men and women change their jobs frequently when they cannot earn enough to be retained on company pay rolls or when they believe they can earn more elsewhere. A firm will always listen to a salesman who seems to have the ability and energy to make money for the company by selling its goods or services.

**Wholesale salesmen.** Wholesale houses employ city salesmen, to cover the local trade, and traveling salesmen to cover larger territories. These salesmen sell goods in large quantities to retailers and buyers in industries by calling periodically on regular customers and by getting new customers in their areas. In order to make sales, they may carry catalogs or samples of products. To stimulate further buying, they may inform customers of the trends in price rises and future demand for goods. Wholesale salesmen work on salary, commission, or some combination of both. Some like a straight commission basis better because their income is larger when they are able to increase their sales. These men are likely to earn up to \$5000 a year or more according to their ability and effort. Although a wholesale salesman needs little professional or technical knowledge of the goods he sells, he must study trade journals, keep informed about market conditions, and exchange sales information in company con-

ferences. The more education and experience he has, the better he is equipped to deal constantly with successful and well-informed businessmen. He needs, in particular, maturity of judgment, patience, and a good personality.

**What is a good salesman?** Some salesmen have been traders all their lives. As youngsters they swapped marbles. In high school they traded bicycles for something better. In adult life, dealing with people and selling them goods continues to be a profitable game for them.

Persons with extravert tendencies make the best salesmen. Psychologists often classify all persons as either (1) an "extravert" or (2) an "introvert." An extravert is a person whose interests tend to center on things outside of himself. Being intensely interested in other people, in his surroundings, and in whatever is going on, he is often the "life of the party." On the other hand, the introvert is the quiet, self-centered person, more interested in his own thoughts, feelings, and comfort than in his surroundings or in other people. Fortunately, most of us are a combination of both types, depending upon the situation in which we find ourselves. However, a good salesman is more the extravert type because he must deal with people, be interested in their problems, "size up" their strengths and weaknesses, and use the right sales approach to fit the client.

Salesmen who have a good knowledge of their merchandise and serv-



COURTESY "BUSINESS WEEK"

**An automobile salesman (1-80)** usually works on a commission basis. He must know the selling points of the cars he handles—price, style, speed, durability, resale value, manufacturer's reputation—in order to convince his customer.

ices and a real confidence in what they sell will be able to influence many customers. High-pressure salesmanship has lost favor in modern business because a customer who is sold something that he does not want is likely to trade somewhere else. Firms want regular customers. Salesmen who sell technical and scientific apparatus need a professional knowledge of its construction, care, and uses. Salespersons with any special knowledge of the arts, sciences, music, sports, and similar subjects can

make use of such information in selling many kinds of goods. For example, a furniture salesman can use any training in art to advantage in pointing out and explaining furniture styles that might interest his customers. A salesman's personality is always important and remembered. A good personality means many things, but in selling it simply means being an agreeable person who is able to sense a customer's needs and wishes, rather than trying to sell him something he may not want.





COURTESY "BUSINESS WEEK"

**Salesperson, shoes (1-75).** The shoe salesman fits shoes to the customer's foot. He may also make shoe displays and sell hose, purses, scarves, etc. He learns the work on the job.

**Are you the type?** Students in school often demonstrate traits that are characteristic of good salesmen. Those who lead group activities influence the thinking of the group members. Those who sell tickets to games or other school activities must be persistent in order to arouse the interest of reluctant people to the point of buying. They must have faith in their ability to make sales. Students seeking first jobs often choose clerking in stores in preference to nonselling jobs. Some students in work-experience programs

demonstrate interest and aptitude for selling long before they leave school. Certain young people in school are more observant of human nature and know how to handle difficult personal situations. Students who are good conversationalists will be likely to learn selling more easily than others. Other traits that have some predictive value include a good memory for details, a cheerful disposition, ease in handling figures, accuracy in keeping accounts, enthusiasm, and energy. Interest inventories given in school may indicate an interest in selling, but such an interest must be coupled with an aptitude for selling before the score has any predictive value.

### INSURANCE SALESMAN (1-57)

More than 300,000 agents and brokers, including 26,000 women, worked as insurance salesmen in 1950. Insurance means protection against some form of loss by death, accident, illness, fire, water, wind, theft, or other cause. Certain insurance policies also provide savings features, such as educational funds for children when they are old enough to enter college, income throughout a lifetime, or endowment funds after 20 or more years. A client takes out insurance to provide for his dependents and to insure his house, his car, or his property against damage. It is the agent's job to sell him the right type of policy. The agent, therefore, should be mature enough to have had experience in finance. For that

reason most people have more confidence in agents who are over 30 years of age. Insurance agents usually specialize in (1) life insurance or (2) general insurance, such as fire, accident, casualty, or burglary.

**Life-insurance agents.** Life-insurance agents sell policies in amounts of \$1000 or more to clients. A client insures his life so that in case his income is cut off by illness or death his dependents will not suffer. A client, therefore, expects the agent to be well informed on insurance laws, social security, taxation, and investments related to insurance. The agent, as financial adviser, develops a plan to fit the individual's needs for insurance—funds for final expenses, family income plans, retirement plans, and educational and other plans.

Industrial life-insurance agents sell life insurance to persons in the lower brackets of income who usually take out policies in amounts of less than \$1000 with premiums (payments) payable weekly or monthly. No medical examination is required for these policies, and the agents collect the payments regularly at the homes of the policyholders. About a third of the life-insurance agents sell industrial life insurance.

Some insurance agents sell group insurance policies to insure a large group of persons. Such groups may be employed in the same organization or company; they may all be in a certain kind of occupation; or they may be people who wish to take out

policies for a certain purpose, such as for hospitalization when ill.

**General insurance agents.** As a rule, an insurance agent represents one company directly. A broker, representing several companies, is able to write any type of insurance. He is not under contract with any one company and is usually employed by a brokerage firm in a city. Most brokers and one-third of the insurance agents deal in general insurance.

Agents who sell general insurance, as well as those who sell life insurance, call on many prospects, selected from an active list of likely clients, and interview them either at home or at their place of business. Those who sell insurance enjoy independence in their work but operate under a company manager. They plan their own work, select their own clientele, and regulate their own working hours, whether day or evening. The agent works on a commission basis, so that his income depends upon his success in selling insurance. Competition is usually keen for beginners who must compete with experienced salesmen.

**Preparing for the work.** To sell insurance, an agent must obtain a contract with a company through the general agent. The local community where the agent is best acquainted is the best place to begin. The local general agent will explain how agents are selected and trained, as each company has a training program of some kind and opportunities are plentiful.





COURTESY "BUSINESS WEEK," PHOTO BY R. ISEAR

**An auctioneer (1-51)** sells goods at an appointed time to buyers who gather to bid on them. The auctioneer talks continuously to stimulate the desire to buy. As the bidding lags, he warns, "Going! Going! . . ." and finally he says, "Sold to the highest bidder." Training for this work is usually on-the-job with an auctioneering firm.

Upon completion of such training, an agent applies for a state license to sell insurance in his state, and he may have to take a written examination. There are no standard educational requirements for becoming an insurance agent. Colleges provide many courses in insurance and related work. Correspondence schools also offer home study courses. To become a Chartered Life Underwriter (C.L.U.), an agent must be a high school graduate, 21 years of age or over, with 3 years of successful life-insurance experience, and must take the examinations given by the American College of Life Underwriters. These examinations cover life insurance, salesmanship, and related subjects. For further information write to the Institute of Life Insurance, 488 Madison Avenue, New York 22, New York, or to the National Association of Insurance Agents, 80 Maiden Lane, New York 7, New York.

### **REAL-ESTATE SALESMAN (1-63)**

A real-estate salesman deals with buyers, owners, and renters of lands and buildings. Opportunities for salesmen are usually good because real estate is a form of security influencing the lives of everyone in any occupation who owns or rents property. Farmers and miners work on the land itself. Industrialists and manufacturers improve the land by erecting large plants to occupy the land. Everyone lives in a home that is rented or owned and taxed.

Real-estate salesmen do not deal in building construction, but with the development of property. This includes buying, selling, renting, managing, and operating buildings and land. They rent and sell property, make leases, find buyers and renters, collect rents, and make exchanges as agents for owners of properties.

More than 120,000 men and 20,000 women sell real estate, usually on a commission basis. A salesman's commission for selling a single modest home in a large city may run well over \$1000. He must own and operate an automobile for the purpose of taking his clients to inspect properties that are for sale. Those who intend to sell real estate must understand how business is transacted, have some knowledge of real-estate law, and be able to appraise property in order to satisfy both purchaser and owner. The real-estate salesman must meet people easily, be a good judge of character, and find out if a customer is financially able to buy.

Although there is no special training required for becoming a real-estate salesman, employers want salesmen who have at least completed high school, because a real-estate salesman must be able to read and understand real-estate law, deeds, mortgages, trusts, leases, contracts, titles, and taxes. Even though a person does well in salesmanship courses offered in vocational schools, business colleges, and universities, he must have some on-the-job training before he can become a successful



real-estate salesman. In 32 of the states a real-estate man is required to have a state license if he wishes to become a real-estate broker and operate an office of his own. Information about examinations and requirements for such licenses may be obtained from the National Association of Real Estate Boards, 22 West Monroe Street, Chicago 3, Illinois.

### **AUCTIONEER (1-51)**

Of all people in sales work, the auctioneer is probably the most colorful. Auctioneering is discussed here to show one of the more unusual opportunities in selling and some of the characteristics needed by any good salesman. Anyone may observe an auctioneer in action by attending a public auction. The auctioneer needs a good personality, ability to get along well with a crowd, energy to talk fast and continuously, and a good sense of values.

The auctioneer sells goods to the customer who bids the highest price, but he must follow certain rules. He represents both seller and buyer and therefore must describe goods carefully to avoid fraud. He sells anything of value, but he cannot sell at private sale nor bid for himself. The

auctioneer may deal in cattle exclusively, or he may auction off only vegetables or tobacco.

The auctioneer usually has auction rooms where people send goods they want sold for cash. Or he may go to any place in or out of doors to auction off goods, particularly places that are going out of business or homes that are being dismantled. After an auction is advertised in the paper or by bulletin, a crowd of buyers—dealers or individuals interested in buying personally—gathers at the appointed time. The auctioneer selects certain goods known as "lots," appraises them, and asks for starting bids by voice or sign from the crowd. He talks to stimulate buying desire, and when the bidding lags he ends the sale with, "Going! Going! Gone! Sold to the highest bidder."

Opportunities in this work are scarce as there are only 5280 auctioneers employed in 649 auctioneering companies. Practically no women are engaged as auctioneers. Two or three schools offer training for auctioneering, but the usual method of learning is by way of on-the-job training. If you are interested in auctioneering, find a job as helper to an auctioneer, watch what he does, and substitute for him when occasion arises.

### **For Discussion**

1. Name six different types of salesmen that you have observed.
2. Considering numbers of workers, what type of selling is most attractive to (a) men and (b) women?

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern salesmanship.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Demonstrate how advertising art is a form of salesmanship.
<b>BUSINESS:</b>	If you were an employer, what would you look for in a person you were selecting as a sales clerk?
<b>ENGLISH:</b>	Tell of one salesman who lost a sale because of his poor English. Tell of another salesman who made a sale because of his persuasive English.
<b>HEALTH:</b>	Why is it an advantage for a good salesman to radiate health and well-being?
<b>HOME ECONOMICS:</b>	As a buyer, should a homemaker rely on a sales talk or learn to appraise a product for herself?
<b>LANGUAGES:</b>	List foreign words that American salespersons often misuse, misspell, or mispronounce—chaise longue (long chair), lingerie (underwear), objet d'art, suite, etc.
<b>MATHEMATICS:</b>	In what ways does a salesman have to have a practical knowledge of arithmetic?
<b>MUSIC:</b>	What salespersons are required to have a good knowledge of music?
<b>OCCUPATIONS:</b>	Tell about any part-time, on-the-job training—that is, work-experience programs—for selling occupations in your community.
<b>SCIENCE:</b>	What type of selling jobs might a person trained in science take up to earn a living?
<b>SHOPWORK:</b>	What qualifications should a salesman of shop equipment have?
<b>SOCIAL STUDIES:</b>	In what way have our most famous statesmen been salesmen?



3. Where do most retail salesmen work?
4. What qualifications does a wholesale salesman (traveling salesman) need?
5. Explain what an extravert is and why he makes the best salesman.
6. What does a life-insurance agent do?
7. In your community, find out what a real-estate salesman's commission is and figure what he would receive for selling a \$10,000 house.
8. How does an auctioneer manage an auction?
9. In your community, what selling opportunities are open to young people without experience?
10. How does one go about getting a sales job?
11. What firms in your community take on extra salespersons during holidays?
12. Name 10 different services (not goods) that salesmen offer to customers.

### What to Read

- Careers in Retail Business Ownership*, Robert Shosteck and Max F. Baer. B'nai B'rith Vocational Service, Washington, D.C., 1946. 347 p.
- Careers in Retailing*, Edwina B. Hogadone. Vocational Guidance Series, Rochester Institute of Technology, Rochester, N.Y., 1952. 24 p.
- Employment Outlook in Department Stores*. Bureau of Labor Statistics Bulletin 1020. U.S. Government Printing Office, Washington 25, D.C., 1951. 23 p. (20 cents)
- Get Acquainted with Retailing*. Chamber of Commerce, Philadelphia. 24 p.
- Make Selling Your Career*, Percy W. Ward. Longmans, Green & Co., Inc., New York, 1946. 351 p.
- Retailing*, E. Chamberlain and M. Cox. Bellman Publishing Co., Cambridge, Mass., 1945. 24 p.
- Salesmanship*, Walter J. Horvath. Bellman Publishing Co., Cambridge, Mass., 1947. 23 p.

# CHAPTER 16 THE DOMESTIC SERVICE

## OCCUPATIONS

**D**omestic service means work in a private household. Such work concerns the usual upkeep of the household and yard, cooking for the family, caring for the children, and similar services that need to be done in every private home for members of the household and their guests. Similar workers and maids who serve individuals in the hotel and restaurant industry, laundry industry, and other places *outside* of the home are not grouped with domestic service workers. They are classified as "personal service workers." (See Chapter 17.) Neither does domestic service include the occupations of repairmen or tradesmen who are called in to make repairs to home equipment. Domestic service workers include those shown in the list on page 252.

These workers all work for one or more private families. Although the style in which families live varies, the household duties to be done are the same: (1) preparing and serving meals and clearing up the kitchen afterward; (2) cleaning, dusting, and

making beds daily; (3) washing, ironing, and pressing frequently; (4) feeding and caring for children regularly; and (5) mowing lawns, shoveling walks, gardening, and driving the family car. There are many other chores around the home for which workers in this group are hired.

**Historical background.** The history of domestic service in this country is unsavory. In Colonial days, convicts who came from England often served out their terms of several years as household servants. In order to get to the new country, some persons sold themselves into service as "indentured" servants for a period of time to pay for the cost of their trip to America. "Free-willers" came to Maryland, and if they failed to work enough to pay for their tickets they were sold to others for servants.

These servants, after serving their terms as domestics for a few years, acquired some land and became independent by earning their own living. Thereafter, the colonists used Indians and Negroes to do their house-



work. Meantime, large numbers of immigrants from Ireland, Germany, and China came to this country as unskilled laborers and found work in both households and factories.

By 1870 domestic and personal servants were the third largest group of workers in the United States. Half of the working population were in agriculture, a fifth in manufacturing, and a tenth in domestic service. Half of the working women were in domestic service compared with 3 percent of the working men.

Since then, however, the proportion of domestic workers, mostly women, has dropped steadily as women have entered other fields of work—especially clerical work and work of operating machines. According to the 1950 Census, 1,334,000 women and 73,000 men are engaged in private household work (domestic service). Approximately one woman in every nine who works today is in

some kind of domestic service with a private family.

#### **Prejudice against domestic service.**

With such a background it is easy to understand the prejudice that grew up around the domestic service occupations. Tradition has carried an unfair bias against the work. For years it carried a social stigma. Workers lacked freedom, hours were long and irregular, and pay was too low for a comfortable living. During and after World War II high industrial wages attracted thousands of domestic workers away from households and into restaurants, factories, and industry. Household workers left their employers to find work with regular pay and definite hours. They performed important work. They mingled with acquaintances of their own choice, and their free time was their own. Many of these people liked housework better than industrial work, but few of them desired

### **DOMESTIC SERVICE OCCUPATIONS (PRIVATE FAMILY)**

(According to the *Dictionary of Occupational Titles*)

- 2-01** Day workers\*
- 2-02** Laundresses, private family\*
- 2-03** Housekeepers, private family\*
- 2-04** Housemen and yardmen\*
- 2-05** Cooks, domestic\*
- 2-06** Maids, general\*
- 2-07** Nursemaids (child monitors, baby sitters)
- 2-08** Parlormaids
- 2-09** Miscellaneous servants, private family (chambermaid,\* personal maid, companion,\* butler,\* valet)

\* Occupation discussed in this chapter.

to return to the work on a prewar basis. Gradually, however, the stigma of domestic service is being lifted.

For years college students have ignored the prejudice against domestic service by earning their expenses doing housework in private homes—washing dishes, cooking, tending furnaces, cleaning house, and doing other odd jobs. They used domestic work as a means to an end, but not as lifework. Such work has not reflected on their social standing because the majority of college students work their way to some extent.

Today many persons may choose domestic service because hours are being regulated to an 8-hour day and pay has been raised to compare favorably with pay in other fields. The attitude of women who hire domestic workers has changed since domestic workers can find work in industry at high wages. Those who employ maids have made many concessions about the number of hours and the amount of physical labor. The Social Security Act, as amended in 1950 and effective in 1951, covers some household workers. Fair-minded people believe that workers should be allowed to engage in domestic service with the same benefits that other workers have. In the future the attitude toward domestic workers will be that of employer and employee, the same as it is in the case of any other occupation where people work.

**Changing conditions.** A few generations ago, when parents raised large



FREDERIC LEWIS

**A general maid (2-06)** in a private home cleans and dusts household furniture, hallways, and bathrooms, changes and makes beds, watches children at play, and has many other household duties. These maids are classified as "domestic service workers," while the maids in hotels are "personal service workers."

families, many hired hands were needed for the upkeep of large homes. Families now average three or four persons generally, and the character of living has changed. The average family of today seldom needs a large house; instead, they prefer a small home with few rooms to take care of or an apartment in a large building where many services are available.

Fewer families employ maids today because modern homes are equipped with appliances that do



household tasks with great speed and efficiency—electric toasters, juicers, beaters, ironers, heaters, washers, dryers, vacuum cleaners, sewing machines, refrigerators, garbage-disposal units, and dishwashers. Grocers sell processed foods that require little time for preparation—frozen foods; semiprepared foods; bread, cake, and pie mixes; and poultry and meats ready for the oven. Many local businesses—laundries, diaper services, cleaning and pressing establishments, window-washing and rug-cleaning services—now take care of duties for many homes that homemakers once had to do by hand in the home. Also, maid service in the home has become a luxury that few can afford. Increased wages for domestic service, decreased hours and services, and difficulty in finding workers have caused many families to do most of their own work, sometimes with the help of a woman who comes in a few hours a week to clean.

**Outlook for domestic workers.** Great numbers of the 35 million private households in this country need domestic help to do the work required in feeding and caring for the families. Employment offices and newspaper ads echo this need for competent workers. Those who cannot afford full-time maids often want regular workers to come in once a week. Even baby-sitting (child monitor, 2-07) has become a widespread service to parents who need someone to stay at home with their children when they go out for an evening.

The future for domestic workers looks brighter, especially for those who work in the cities. If the 8-hour day becomes universal, families that require full-time servants in the evening as well as daytime will have to hire domestic help in two shifts. With better working conditions and better pay, the household workers themselves must be better trained and more efficient than formerly. City maids must offer better service. Some maids prefer to give 4-hour service to a number of different families rather than full-time service to a single family.

Since January 1, 1951, the Social Security Act (as amended in 1950) has applied to household workers employed regularly 2 days a week or more but not to those who work now and then. A maid is included in social security if she meets these two requirements: (1) receives at least \$50 in cash wages during any 3-month period, and (2) works at least 24 different days during that time. In that case, the employer deducts 11½ percent from her cash wages as the maid's contribution to social security, matches that amount, and sends the money to the Director (formerly Collector) of Internal Revenue. Maids were thus brought into Old-Age and Survivors Insurance (part of social security) which had, since 1935, protected millions of Americans in other occupations.

Maids in farm homes are protected under a different provision of the Social Security Act because their work-



BLACK STAR

**The cook (2-05)** in a private home prepares the meals. She may also plan the menus, set the table, and serve the meals.

ing relations differ. Generally, the farmer's wife works along with the maid in order to get the great amount of work done. Also, it is seldom possible for a farm maid to do part-time work for several different families, as a city maid does, because of the distances between homes in the country.

Those who enter domestic service work are mostly young white women, middle-aged white women, and Negro women of all ages. A few men who enter this field will serve as family cooks, butlers, furnacemen, yard-

men, gardeners, housemen, and men-of-all-work. They will do many of the necessary odd jobs that require physical labor.

**What domestic service workers do.** A brief description of some of the jobs in domestic service will help to distinguish this group of workers from those who do similar work in personal service in hotels and other places of business.

**Butler (2-09).** In a large home where there is much entertaining a butler may be employed, but jobs for butlers are becoming scarce. A butler



tends to the serving of luncheons and dinners, receives and announces the guests, and performs other duties.

*Chambermaid* (2-09). One of the "miscellaneous servants, private family" employed in a large home is the chambermaid. The chambermaid takes care of the bedrooms and hallways above the first floor. Chambermaids in hotels are personal service workers and not domestics.

*Companion* (2-09). Another of the "miscellaneous servants" group is the companion. An aged or lonely person sometimes employs another of the same social status to act as a companion and to attend to personal needs and entertainment.

*Cook* (2-05). In a private home the cook prepares the family meals and may also plan the menus, order groceries, and serve at the table.

*Day worker* (2-01). A general maid who works in homes by the hour and is paid as soon as her work is done is called a day worker. She may come to a home one day a week and work in neighboring homes other days in the week. Such work is better paid than regular employment in a single home, but the work is more exacting because the worker must satisfy several different employers.

*Farm housekeeper* (2-03). A housekeeper in a private family that lives on a farm is called a farm housekeeper. Duties, demands, and circumstances vary with every farm. This worker may be expected to do

unusual household duties, assist in light farm chores, feed chickens, pick fruit and vegetables for table use, and do other indoor and outdoor chores. The farm housemaid, or hired girl, does similar work.

*Housekeeper* (2-03). In a large-city home the housekeeper assumes responsibility for managing the entire household if there is no butler. If there is a butler, she supervises the employees above the first floor.

*Houseman* (2-04). Some households employ a houseman, or houseboy, to do the more laborious duties, such as beating and cleaning rugs, scrubbing walls, cleaning windows, and tending furnaces.

*Laundress* (2-02). In a private home the laundress washes and irons household laundry. She may do this work at the employer's home or take it to her own home to be done there.

*Maid, general* (2-06). A general maid, or maid-of-all-work, works under the direction of her employer, doing cleaning and dusting, making beds, watching the children at play, preparing and serving meals, and washing and ironing clothes. Often she is the only domestic employed in the home.

*Nursemaid* (2-07). A nursemaid may be a child monitor (baby sitter), mother's helper, or foster mother. Her duties concern the more simple ones in caring for children—feeding, bathing, and dressing them, watching them at play, taking them for walks—to relieve the parents for periods of time.

**Working conditions.** Work in the field of domestic service is not standardized, and few states regulate wages or hours in this field. The employer in each household determines the work to be done and the way to do it. A good employer knows how much work can be done in a day—how much ironing can be done in an hour, how long it takes to set the table, wash dishes, or prepare meals—and should expect no more work than can be done during the hours agreed upon.

Unless there is a previous understanding, domestic workers are no longer expected to do outside window washing or large washings by hand. Free time for domestic workers is usually agreed upon and adhered to. Workers who "live in" may have comfortable, neatly furnished rooms, or they may live in undesirable attics or basements. A new worker should ask to see her living quarters before she accepts employment. Some workers prefer to live where they like and go to the employer's house each day for work. Domestic service is not unionized because most domestics work in private homes and cannot aid in such activity or provide leaders.

**Earnings.** Wages in domestic service vary considerably, not only in different sections of the country and between city and farm communities but also between different large cities. Generally maids work  $5\frac{1}{2}$  days a week, with Sunday and one half day off. You can find out the prevail-



BLACK STAR

**The houseman and yardman (2-04)** takes care of the grounds around a home. He works with flowers, shrubs, and plantings, mows the lawns, and in winter may shovel snow, wax floors, and do other chores for the household employer.

ing wage in your community by asking the State Employment Service. To this amount you should add whatever board and room is worth locally, since this is a part of a domestic worker's pay, if she lives in, aside from the cash she receives. It often happens that the domestic worker is better off financially than



many office workers who must pay a good portion of their income for living expenses and appearance.

Domestic workers are now covered by the provisions of the Social Security Act. Wisconsin is the only state that has minimum wage laws now in effect for domestic workers. These are as follows: if board only is furnished, \$10.25 to \$12 a week; if board and lodging are furnished, \$7 to \$8 a week; for work less than 45 hours a week, 38 to 45 cents an hour. In Washington, D.C. the rate is about \$20 to \$25 a week.

#### **Preparation for domestic service.**

Through necessity, many young girls learn to do housework and cooking very early in their own homes. These self-trained workers prove to be excellent housekeepers and cooks before they enter private employment. Some employers are willing to take girls without experience and train them in methods of cooking and serving meals, cleaning, and other home tasks.

More than a hundred public vocational schools in 14 states provide some training for those who wish to enter domestic service. Home economics classes in public schools also furnish desirable supplementary training. Additional opportunities will be opened whenever the demand for such classes is great enough.

Besides these schools, a number of

neighborhood houses, service agencies, and institutes in large cities hold classes of instruction for household workers. They also maintain placement offices through which desirable jobs may be found.

**Finding the job.** Both employers and workers use the same agencies in filling situations, and each wishes to know some facts about the other. The employer is likely to ask: How old are you? Have you had a physical examination? Where have you worked? What are your references? What experience have you had? What training have you had? Do you like children? Do you like housework? Can you cook? What household duties do you do well?

The worker, in turn, should ask the employer certain questions before accepting the job: Is the work regular or temporary? How large is the family? How large is the house? What kinds of duties are expected? What are the hours of work, and what free time is allowed? What are the wages? What kind of room is provided?

Girls find jobs through friends, relatives, the State Employment Service, private employment agencies that charge fees, church groups, YWCA's, social agencies, and newspaper ads. The agencies bring the employer and worker together to talk over the job and arrangements for work.

#### **For Discussion**

1. Who are the domestic service workers?
2. Discuss the history of domestic service in America.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern domestic service occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	What kind of art course will help a domestic service worker learn good taste in home decoration?
<b>BUSINESS:</b>	What part of a business course will be most helpful to a domestic service worker?
<b>ENGLISH:</b>	How can a domestic service worker improve poise and self-development through training in English?
<b>HEALTH:</b>	What are the laws in your state concerning physical examinations of domestic service workers?
<b>HOME ECONOMICS:</b>	How can a domestic service worker apply lessons learned in home economics?
<b>LANGUAGES:</b>	How might a maid from another country use her knowledge of a foreign language in the American home where she works?
<b>MATHEMATICS:</b>	What principles of arithmetic will be most useful to a domestic service worker?
<b>MUSIC:</b>	In what way does music help to lighten the work of the domestic service worker?
<b>OCCUPATIONS:</b>	What are the trends in domestic employment in your community since World War II?
<b>SCIENCE:</b>	How would a domestic service worker apply lessons in household science?
<b>SHOPWORK:</b>	What vocational course would be of greatest advantage to a domestic service worker?
<b>SOCIAL STUDIES:</b>	Why do many young girls shun domestic service as an occupation? Tell briefly the history of the domestic service worker in the United States.



3. Why was prejudice built up against domestic service?
4. Is domestic service today a good opportunity for many persons?
5. How many students in your class act as baby sitters, or child monitors?
6. How do earnings in domestic service compare with those in clerical work in offices today?
7. How are maids protected under the 1950 amendment to the Social Security Act?
8. How does a domestic service worker find a job?
9. Name some of the duties expected of a domestic service worker.
10. Explain why fewer families employ maids today than formerly.
11. Compare the duties of a farm housekeeper with those of a housekeeper in the city.

#### What to Read

*Household Employees' Handbook*, Marion Hurst. The Dewing Publishing Co., Oklahoma City, Okla., 1939. 155 p.

*Job Descriptions for Domestic Service and Personal Service Occupations*, U.S. Employment Service. U.S. Government Printing Office, Washington 25, D.C., 1939. 261 p. (\$1.00)

# CHAPTER **I7** THE PERSONAL SERVICE AND

## BUILDING SERVICE OCCUPATIONS

**A**s the title of this chapter implies, personal service workers and building service workers give service to individuals—hair-dressing, practical nursing, waiting on table, carrying baggage, and operating elevators—all outside of the

private family. Because the jobs in this chapter are of two different types, personal services and building services, the group will be discussed under two headings: (I) Personal Service Occupations and (II) Building Service Occupations.

### I. Personal Service Occupations

When you have your hair trimmed at the barber shop or beauty parlor or when you give your order to a waiter in a restaurant, you pay for *personal* service. Personal service workers do not work in private homes, as domestics do, but serve customers in regular places of business—barber and beauty shops, boarding houses, hospitals, hotels, restaurants, theaters, etc. Most customers—especially those who travel or live away from home—must pay for a certain amount of personal service in order to keep well groomed and well-cared-for wherever they are. The personal services offered by workers are summarized in the list of personal service occupations on page 262.

Most personal service workers work close by their customers—waiting on them, serving them, and attending to their personal needs. For example, a customer may engage a personal service worker for each of these various services: cutting his hair, shining his shoes, pressing his clothes, taking his order for dinner, running personal errands for him, showing him his seat in the theater, calling a taxi for him, preparing special foods for him, and otherwise tending to his personal needs and wishes.

Each of the occupational titles mentioned on page 262 includes a number of different jobs. Title “2-29 Kitchen workers in hotels” includes



a cook's helper, pantryman, sandwich man, bus boy, dishwasher, garbage man in a hotel, or silver cleaner in an eating place. Or, "2-40 Attendants, recreation and amusement" includes golf caddies, pin boys in bowling alleys, ride operators in amusement parks, ticket takers at entertainments, or Santa Clauses in department stores. The duties of the jobs under each title are similar but not exactly alike.

More than 4 million men and women earn a living by giving personal service to customers. One of the reasons why this is such a large group is that, with few exceptions, personal service jobs offer opportunities for

people without much experience, and the training period, if any, is short. Half of the men work as janitors, guards, cooks, barbers and policemen. Half of the women work as waitresses, cooks, and beauticians. In the table on page 264 figures are given to show the percentages of men and of women engaged in the different personal service occupations.

The earnings of personal service workers are generally not fixed amounts but vary with their place of work. For example, a waitress in a small-town cafe might total \$35 a week, while a waiter in an exclusive restaurant or a swank night club in a big city might make several times as

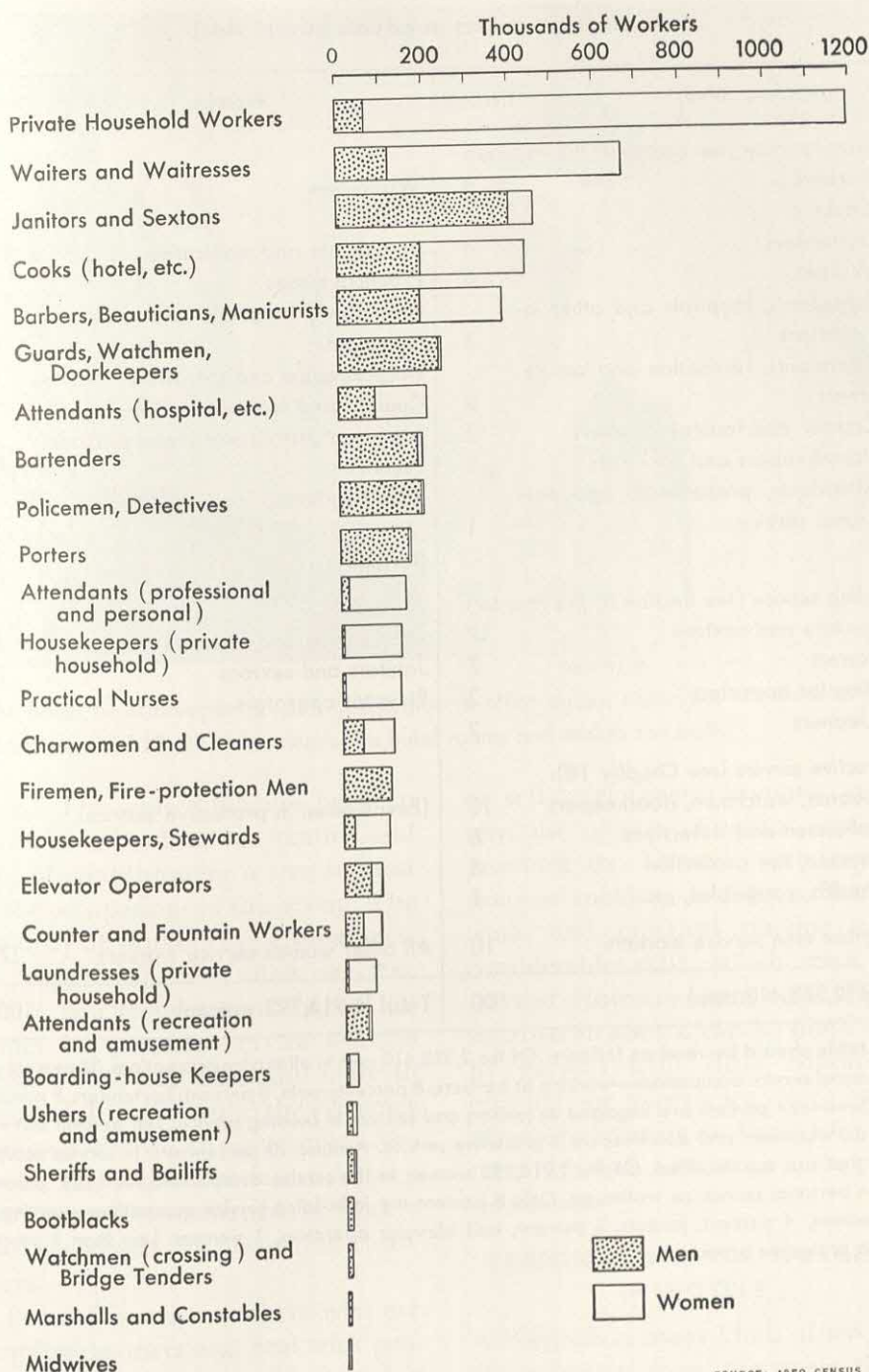
### PERSONAL SERVICE OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 2-22 Bellmen and related occupations\*
- 2-23 Boarding-house and lodging-house keepers
- 2-24 Maids and housemen, hotels, restaurants, etc.\*
- 2-25 Housekeepers, stewards, and hostesses\*
- 2-26 Cooks, except private family\*
- 2-27 Waiters and waitresses, except private family\*
- 2-28 Ship stewards
- 2-29 Kitchen workers in hotels, restaurants, railroads, steamships, etc.\*
- 2-32 Barbers, beauticians, and manicurists\*
- 2-34 Bootblacks
- 2-36 Guides, except hunting and trapping
- 2-38 Midwives and practical nurses\*
- 2-40 Attendants, recreation and amusement
- 2-42 Attendants, hospitals and other institutions
- 2-43 Attendants, professional and personal service
- 2-44 Camp attendants
- 2-45 Doormen
- 2-47 Apprentices to service occupations
- 2-48 Ushers

\* Occupation discussed in this chapter.

# MAJOR SERVICE OCCUPATIONS



SOURCE: 1950 CENSUS DATA



**MEN AND WOMEN IN THE SERVICE OCCUPATIONS**  
(excluding workers in private households)

Men	Percent	Women	Percent
<i>Personal service (see Section I, this chapter):</i>			
Barbers	8	Waitresses	29
Cooks	8	Cooks	13
Bartenders	8	Beauticians and manicurists	10
Waiters	5	Practical nurses	7
Attendants, hospitals and other institutions	3	Attendants, hospitals and other institutions	6
Attendants, recreation and amusement	2	Housekeepers and stewards	4
Counter and fountain workers	2	Counter and fountain workers	2
Housekeepers and stewards	1	Attendants, professional and personal service	2
Attendants, professional and personal service	1	Boarding-house and lodging-house keepers	1
		Bartenders	1
<i>Building service (see Section II, this chapter):</i>			
Janitors and sextons	17	Charwomen and cleaners	4
Porters	7	Janitors and sextons	3
Elevator operators	2	Elevator operators	1
Cleaners	2		
<i>Protective service (see Chapter 18):</i>			
Guards, watchmen, doorkeepers	10	(Few women in protective service)	—
Policemen and detectives	8		
Firemen, fire protection	5		
Sheriffs, constables, etc.	1		
All other men service workers	10	All other women service workers	17
Total (2,373,410 men)	100	Total (1,914,293 women)	100

**This table should be read as follows:** Of the 2,373,410 men in all service occupations, 38 percent are in *personal service* occupations—working as barbers, 8 percent; cooks, 8 percent; bartenders, 8 percent; etc. Seventeen percent are engaged as janitors and sextons in *building service*. Ten percent serve as guards, watchmen and doorkeepers in *protective service*. Another 10 percent are in service occupations that are not classified. Of the 1,914,293 women in the service occupations, most (29 percent) are in *personal service* as waitresses. Only 8 percent are in *building service* occupations—serving as charwomen, 4 percent; janitors, 3 percent; and elevator operators, 1 percent. Less than 1 percent are in *protective service*.



COURTESY MAYFLOWER HOTEL, WASHINGTON, D. C.

**The hotel housekeeper (2-25),** in addition to other duties, supervises the work of the **chambermaid (2-24)** who cleans the hotel rooms and makes the beds.

much. The same difference between earnings according to locality and type of establishment is true in most of the occupations in this group. The majority of workers in personal service expect tips for their services. There is a trend toward higher incomes for personal service workers because they are more and more in demand. In addition to the efficiency and ease with which a worker renders service, an important factor in such work is the personality of the worker and his efforts to please his customers.

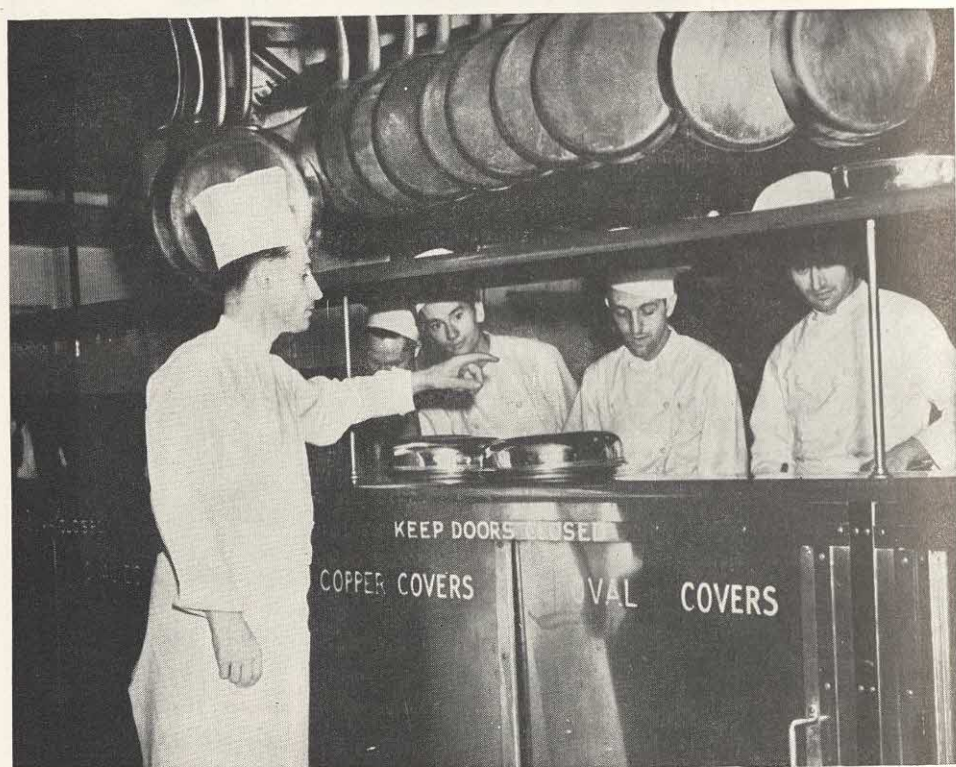
Personal service workers who are required to meet and deal with people need some high school education

or self-development in poise, courtesy, use of good English, neat appearance, etc. Those in such occupations as cooking, barbering, beauty work, and practical nursing need considerable skill, which must be learned. However, many types of personal service work can be done well by persons with little education, training, or experience. Such work offers opportunity to those who did not finish their education in the public schools.

### PERSONAL SERVICE WORKERS IN HOTELS

A hotel offers many kinds of services to its guests, from preparing their





COURTESY WALDORF-ASTORIA

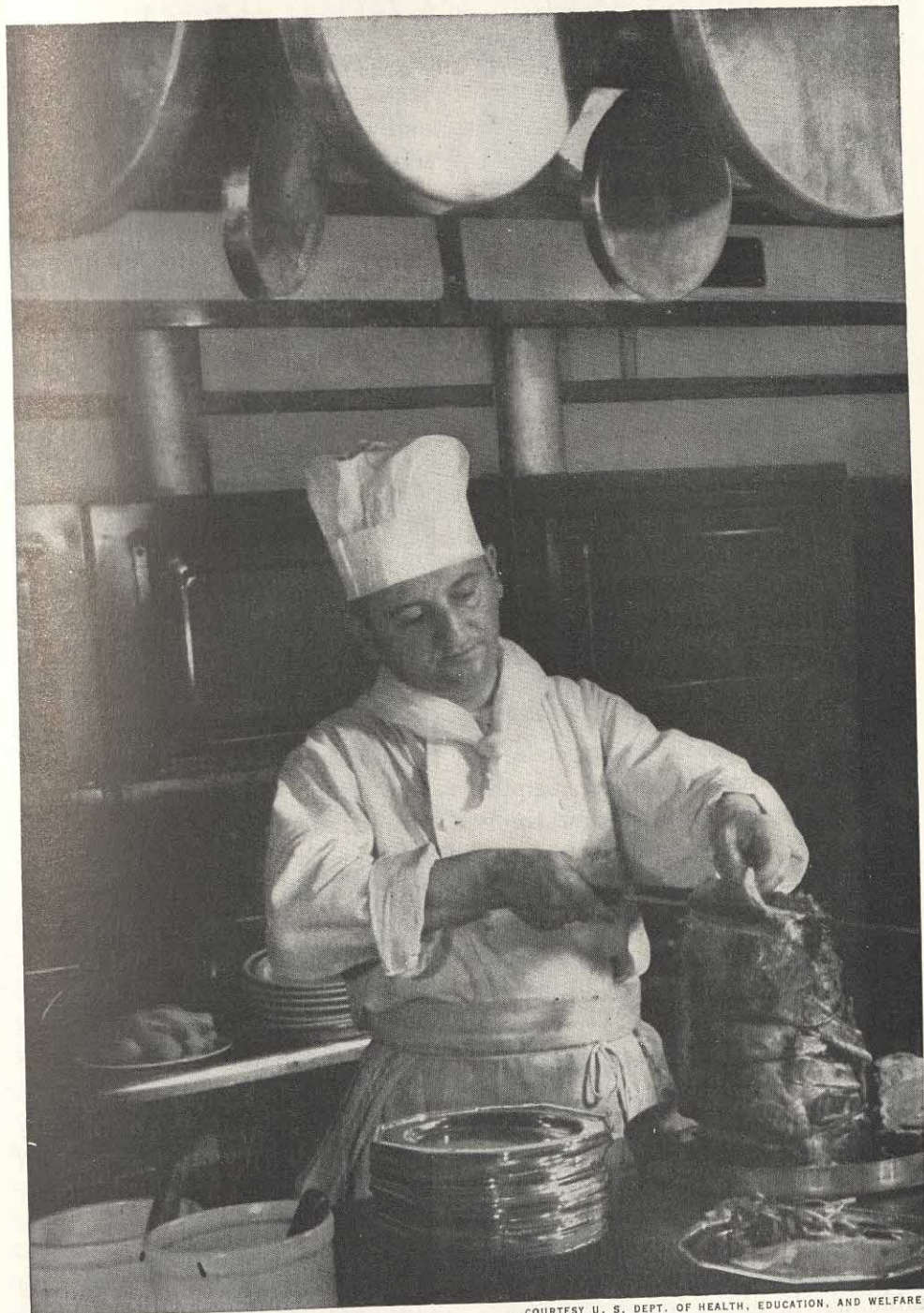
**An executive chef (2-26)** directs the work in the main kitchen of a hotel. His duties are limited to supervising cooks and buying food. In small hotels these duties might be carried out by the chef or chief cook.

meals to attending to their laundry and cleaning. The 29,000 hotels in the United States employ nearly half a million workers of all types. Nearly three-quarters of these employees are in personal service jobs—especially in the restaurant and housekeeping departments of the hotels. Personal service jobs in hotels sometimes provide a means of entrance into other occupations in a hotel, such as desk clerk or assistant manager. A few of the service jobs are briefly described below.

*A bellman (2-22)* is the well-

known “bellhop” who shows guests to their rooms and attends to their baggage. The bellman works 8 hours a day on a 6-day week. He may earn \$21 a week plus tips, which in large cities are often substantial enough to be worth many times his wages. The occupation is overcrowded, but opportunities may be found in small hotels.

*A bus boy (2-29)* is a kitchen worker. He takes soiled dishes from the dining room to the kitchen, cleans up the dining room, and may serve customers with water, ice, and



COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**A meat carver (2-29)** carves roasts in a hotel kitchen and also trims, disjoints, and slices poultry, aiming to obtain the maximum number of servings.



butter. This is a beginning job, and pay is nominal with very few tips.

*The chambermaid, or maid, (2-24)* does all the general cleaning in hotel rooms, makes the beds, empties the wastebaskets, and cleans the bathrooms. How much she earns depends upon the size of the hotel and the tips she receives from guests.

*The housekeeper (2-25)* in a hotel supervises the work of the room maids and assistants who are responsible for keeping the rooms, halls, and furnishings clean and attractive. A housekeeper may earn \$75 to \$100 a month in a small hotel and \$150 to \$350 a month in a large hotel. Most housekeepers generally receive meals and lodging in addition, but tips are few.

*A cook or chef (2-26)* may begin as a short-order cook, who prepares, cooks, and serves-to-order simple foods which require only a short time to prepare. His earnings are nominal—\$35 and up a week with one or more meals. Or the cook may be a highly skilled chef who earns a high salary in a large metropolitan hotel.

### **WAITER AND WAITRESS (2-27)**

Whether you get a cup of coffee at a hamburger stand or sit down to a full-course dinner at a famous hotel, a waiter or waitress (personal service worker) takes your order. Waiting on table may be either informal or formal, depending upon the nature of the dining-room service. Informal

service is the rule in most eating places that serve quick meals. Hotels and exclusive cafes provide formal service for customers who like to dine in quiet surroundings. Custom determines the table setting. Public eating places stress hospitality and try to make their customers feel at home. Many restaurants employ hostesses to meet the guests at the door and show them to their tables. Alert waiters and waitresses add to dining pleasure.

Including both men and women, the waiters and waitresses—numbering half a million—make up the largest group of personal service employees. Twice as many women as men, however, have jobs waiting on tables in eating places.

The field is seldom overcrowded because the turn-over is high. In the summertime many college and high school students find chances to earn expenses by waiting on table at mountain and seaside resorts. A well-trained waiter or waitress who is well groomed, self-confident, and capable of making a good impression on customers can always find a job. Always in demand are waitresses between 18 and 40 years of age, of medium height and size, and able to carry trays weighing up to 11 pounds. A waitress gives careful attention to her hair, teeth, complexion, dress (little or no jewelry), and feet.

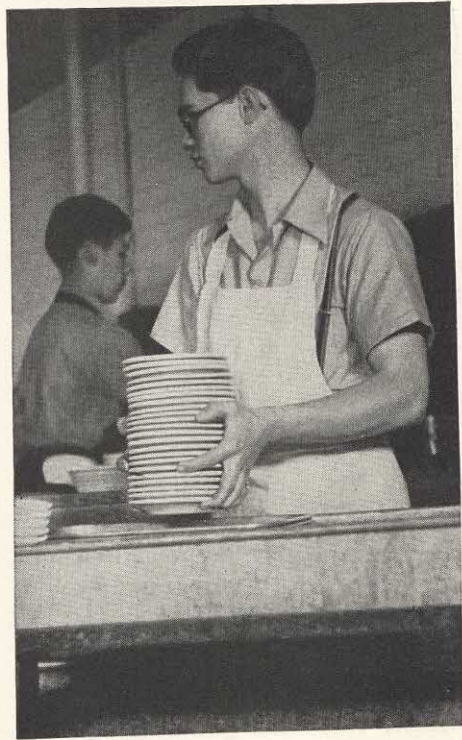
In most places a waiter or waitress must pass a food handler's physical examination. Good restaurants require them to meet daily to go over

the day's menu, with attention to prices and selections, and to receive instruction in serving and dress. Cleanliness is important. Uniforms must be clean and complete. Those with steady nerves, good memory, and familiarity with the business make the best workers. Part of the job concerns knowing how to suggest dishes and to "sell" the dishes on the menu. In taking orders, the waiter or waitress must learn the menu, know how every dish is cooked, and be ready to answer such questions as, "What does 'au gratin' mean?" "Are the vegetables fresh or canned?"

Some restaurants require those who wait on table to begin as a bus boy or a bus girl. Some workers start out in large restaurants by waiting on a small number of guests only. Many others find opportunities as beginners in small restaurants, gaining experience in 3 to 12 weeks.

Earnings vary with the type of eating place but usually consist of wages (\$4 or \$5 a day), tips, and meals. Tips are usually more than the wages. Workers on straight shifts may receive two meals, with half an hour for each meal; part-time workers get one meal; resort workers get three meals and room. Most waitresses supply their own uniforms. Waiters usually work 48 hours a week, although some have longer hours. Bus boys and girls, who seldom receive tips, often receive slightly higher wages than the waiters and waitresses they assist.

Vocational schools in 38 states offer



**Bus boys (2-29)** carry used dishes from a cafeteria, restaurant, or hotel dining room to the kitchen. They are also responsible for the supply of clean dishes, silverware, and linens in the dining room.

instruction in waitress training, sanitation, food handling, food production, nutrition, job-instruction training, and other phases of restaurant operation. Many learn to wait on table by working in a small restaurant—that is, by on-the-job training.

### **BARBER (2-32)**

In big cities and tiny villages, the barber's pole marks the shop where men go for the barber's ordinary services of cutting and shampooing



hair, shaving, and giving facial and scalp massages.

Barbers usually work long hours—46 to 51 hours or more per week—but may have many free periods during these hours when there are no customers. The busiest time is in the summer and before Sundays and holidays.

Every state except Virginia requires that barbers be licensed before they work at their trade and that they renew their licenses annually. The State Board of Barber Examiners, located at your state capital, conducts the licensing examinations. Candidates must be citizens of the United States, at least 18 years of age, and of good moral character. Also they must be free from any infectious disease, must be graduates of the eighth grade and of a school of barbering, and must have practiced as a registered apprentice (learner) for 18 months. When a barber holds a license as a journeyman (trained worker), he may open his own shop if he wishes.

Efforts to improve the barber's trade have resulted in pushing up the prices of his services in line with living costs. Earnings vary with the location of the shop, the amount of tips received, the skill of the barber, and his personality with the customer. The shop owner pays his barbers a guaranteed wage (up to \$50 a week) and a commission. The barber furnishes his own uniforms, razors, scissors, and combs.

Boys learn the trade of barbering

by taking a barber course at a public vocational school or at a barbers' college for 6 to 9 months *and* serving an 18-month apprenticeship. Only one apprentice is allowed to each barber shop. The Associated Master Barbers and Beauticians of America, 537 South Dearborn Street, Chicago 5, Illinois, lists approved barber schools. Such schools have one licensed instructor for every 15 students.

### BEAUTICIAN (2-32)

Fashionable women throughout the ages have used cosmetics and hair dressings to add to their personal charm. Today modern beauty shops give beauty treatments with elaborate mechanical equipment. Women make appointments in advance and use these services frequently, spending something like half a billion dollars annually for this work.

Probably 125,000 beauty shops offer beauty service. The U. S. Women's Bureau estimates that one-half of the beauty shops are middle class; one-fourth are small home beauty shops; and one-fourth are high-class beauty chains and elite salons in large cities. The typical shop is small and independent; it is located in the business section of a town; and it employs one or two operators. Four out of every five women beauticians are all-around operators, able to do shampooing, hair setting, permanent waving, hair cutting and dyeing, and manicuring. Men beauticians in the

larger shops specialize mainly in hair styling and cutting and permanent waving.

Nearly 200,000 women and 10,000 men work in the field of beauty culture, and the outlook for skilled operators is good. As the demand for such service increased and large numbers of small shops were established, laws became necessary to protect both the customer and the trained worker. State regulations concerning barber schools often apply also to beauty schools. Now all states except Delaware, Mississippi, and Virginia require beauty operators to be licensed.

To work in a beauty shop, a girl must have at least a grade school education and be at least 18 years of age. Girls from 20 to 25 years old are preferred. They must pass health examinations and have completed training courses of 6 to 8 months in a recognized training center or have taken a training course in a public school. New operators start out in a small neighborhood shop. Most women workers are from 20 to 40 years old. Because of their experience, older women often own their own shops or receive higher wages as skilled operators in the larger salons.

The beauty operator's earnings depend upon such factors as length of experience, personality, ability, quickness of her fingers, and the number of customers she can handle at a time. The location of the shop is also a factor. The average salary for beauty operators country-wide is



COURTESY LIBRARY OF CONGRESS

**A hairdresser (2-32)** is a personal service worker. He waves and combs his patron's hair into becoming coiffures. Most modern women patronize the hairdresser in the beauty parlor. Both men and women learn this trade, and many vocational high schools offer training for it.

from \$40 to \$45 a week. Manicurists receive less. Operators usually furnish their own uniforms, tools, manicuring instruments, and scissors. Hours of work vary from 40 to 44 or more per week.

Learning beauty operation on the job is decreasing, while learning it by school training is increasing. More than 1100 approved training schools offer courses to girls 16 to 18 years of age. Public schools and industrial high schools in large cities offer training for which only a small laboratory



fee is charged, and evening courses are often given in both public and private schools. The majority of states require 1000 hours of training for a 6-month period before allowing a person to take the state examinations required for obtaining a license as a competent beauty operator. The State Board of Beauty Culture, located at your state capital, will provide a list of approved schools and give information about this work.

### **PRACTICAL NURSE (2-38)**

According to the Practical Nurses of New York, Inc., a practical nurse may be defined as follows:

A person trained to care for select convalescents, for acutely and chronically ill patients, and to assist the professional nurse in a team relationship, especially in the care of those more acutely ill. She provides nursing service in institutions and in private homes, where she is prepared to give household assistance *when necessary*. She may be employed by a private individual, a hospital, or a health agency. A practical nurse works only under the direct orders of a licensed physician or the supervision of a registered professional nurse.

In a home a practical nurse takes care of sick, aged, or convalescent people. She cooperates with the physician or with the registered nurse. In hospitals she usually works 8 hours a day, but in homes her hours

vary from 8 to 20 daily. Her earnings vary considerably from place to place and according to the amount of work she performs. She may receive as much as \$7 to \$11 a day with maintenance. In some states the accepted fee for a practical nurse is 75 percent of the professional nurse's usual salary.

Employment opportunities are excellent for practical nurses with training, but those without any training will find difficulty in getting work. Women trained in practical nursing find employment in public and private institutions and in private homes. Men in this type of work are known as "hospital orderlies," because most of them work in hospitals.

The National League of Nursing recommends that all practical nurses be licensed, and half of the states have made some provision to this end. Requirements for a license vary but generally call for graduation from an approved 9- to 18-month course covering the following: care of children, the aged, convalescents, the mentally ill; dietetics and food preparation; hygiene; elementary anatomy; and nursing methods.

Practical nursing courses are offered in many public vocational schools, in hospitals, and in some 84 approved private schools of practical nursing. Two years of high school are suggested for entrance to an approved school. The State Board of Nurse Examiners in each state will furnish a list of approved schools.



COURTESY MARSHALL FIELD &amp; CO.

**Models (2-43) and salespersons, women's garments (1-75)** are often trained by the department store in which they are employed. Sometimes high school and college girls are employed as models in local department stores during fashion shows. Modeling is classified as a personal service occupation.

### AIRPLANE HOSTESS (2-25)

The occupation of airplane hostess, or air-line hostess, is briefly described here, not because there are many opportunities, but because the work has been so glamorized that many young girls are curious about this type of personal service. Many air lines are now employing male stewards to replace or to work with hostesses because so many of the young women hostesses leave the service to get married or to accept other work nearer home.

During flight the hostess takes passengers' coats and hats, attends to their needs and comfort, and may give minor medical aid to relieve headaches or airsickness. From a tiny

kitchen, she serves prepared meals. She also makes out reports, answers questions about the plane and its schedule, and points out places of interest. The hostess is a regular member of the crew of an air liner.

Probably three to four thousand girls are employed as airplane hostesses. The air lines prefer girls 21 to 26 years of age, unmarried, 5 to 5½ feet tall, 100 to 125 pounds in weight, with normal hearing and eyesight. A hostess must be friendly, gracious, poised, and emotionally stable, and she must have good common sense.

A hostess is away from her home base about half of the time, and her working time averages more than 100 hours per month. While she is on duty away from home, the air line



pays her living expenses. Her earnings range from \$170 to \$235 or more a month. The turn-over in this work is high, but competition for jobs is keen, in spite of the fact that on many lines girls hold their jobs in service for less than a year.

The usual requirement for entrance to the work of airplane hostess

is high school graduation and 1 to 2 years of college. A girl may begin as a student hostess in training with an air line, or she may attend a special school for hostesses. By arrangement with the air lines, such schools accept only girls approved by the companies so that graduates are fairly sure of being placed.

## II. Building Service Occupations

Office buildings, factories, schools, hotels, banks, apartment houses, and other buildings must be kept clean and orderly, and this is the job of the building service workers. Modern buildings now have vacuum cleaning systems, electric floor polishers, and other mechanical means of lightening the work of the cleaners. These workers are classified as shown in the table below.

The janitors and charwomen clean the offices, shops, and corridors in buildings. The porters move or carry equipment, baggage, or materials in and out of buildings. The elevator operators are included in this group

because they serve buildings rather than persons. These workers perform tasks that are highly necessary for the comfort of employees who work in such buildings. For example, employees who leave cluttered offices at the end of a business day return the next morning to find things straightened up and cleaned during the night by building service workers, hired by the company or building.

Most of these jobs require little education, training, or experience. Young people often take such work as a means of earning money during vacations, while in college, or for part-time work. In the Federal Government salaries for this type of work begin at \$1810 a year.

Many people get into the occupations in this group because they are not qualified to do any kind of skilled or semiskilled work, for the building service group includes many types of jobs for people who have little aptitude for more exacting work or no opportunity for further training.

### BUILDING SERVICE OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 2-82 Charwomen and cleaners\*
- 2-84 Janitors and sextons\*
- 2-86 Porters\*
- 2-91 Pullman porters\*
- 2-92 Baggage porters\*
- 2-95 Elevator operators\*

\* Occupation discussed in this chapter.

**JANITOR OR CUSTODIAN****(2-84)**

The window is broken—call the janitor. The door is jammed—call the janitor. We need more heat—call the janitor. The janitor's main duties are cleaning, sweeping, dusting, mopping, and scrubbing. In small towns he not only takes care of maintenance but also tends furnaces that supply heat. In large cities his duties are divided so that he *either* (1) takes care of maintenance of offices, stores, churches, schools, apartment houses, and hotels *or* (2) he takes care of supplying the heat in such buildings. He may be known by one of several titles. Schools prefer the title "custodian." Hotels prefer "operating engineer" or "fireman." And some janitors are called "building superintendents." The *Dictionary of Occupational Titles* classifies all such workers under the group title of "janitor."

The main task of the school custodian includes sweeping the rooms of the school and taking care of the halls and floors after school hours. In large schools a special custodian, or operating engineer, supplies the heat but does no cleaning.

More than 401,000 men and 53,000 women work as janitors, custodians, and sextons. Janitors are generally selected on the basis of their reliability, industry, and ability to get along with the people they serve. Living quarters are often provided for these

workers in hotels and apartment houses as a part of their earnings. To be employed in janitorial or custodial work in the Federal Government a man must be between the ages of 21 and 50 and pass a U. S. Civil Service examination.

**CHARWOMAN AND WINDOW  
CLEANER (2-82)**

More than 47,000 men and 72,000 women sweep and clean offices and buildings, usually at night after other employees have gone home. Charwomen should be in good physical condition and able to work well with their hands. They need little education beyond reading and writing. Window washers (men), also in this group, receive better pay than charwomen because they take many risks in cleaning windows on the outside. For safety they wear belts that hook onto the window frames. In the Federal Government pay for such work is at the rate of \$2700 per year. A few vocational schools offer some training for work in the care and maintenance of buildings.

**ELEVATOR OPERATOR (2-95)**

More than 62,000 men and 27,000 women operate elevators in office buildings, apartment houses, department stores, and hotels. Operators of passenger elevators in small places may also distribute mail and answer telephone calls. Most passenger-elevator operators are young, active,



courteous, and neatly dressed. The operator of a freight elevator may assist in unloading freight from trucks and carrying it to the proper destination in the building where he is employed. Learning to operate an elevator requires only a few hours.

### **PORTERS (2-86), (2-91), (2-92)**

There are several kinds of porters, each with a different kind of work to do. *Porters* (2-86) work in office buildings, banks, stores, and fac-

tories. This group includes men who do such tasks as cleaning up working areas—brass polishers, sweepers, hall cleaners, and utility men. *Pullman porters* (2-91) on Pullman cars make up berths and perform many services for the comfort of travelers. *Baggage porters* (2-92) are the “Redcaps” at the railroad stations and porters, or “Aircaps,” at the airports. They handle the travelers’ baggage to and from the station and the train or plane. Transportation companies train their own porters.

### **For Discussion**

1. Who are the personal service workers?
2. Which personal service occupations are mostly held by men and which mostly by women?
3. Name the personal service workers employed by hotels.
4. Compare the duties of a maid in a home (domestic service worker) and a maid in a hotel (personal service worker).
5. Describe a waitress that any employer would like to hire.
6. How does a man prepare to become a barber?
7. How many beauty shops located in or near your community are listed in the classified index of the local telephone directory?
8. Tell how a practical nurse differs from a registered nurse.
9. Explain what an airplane hostess does and why so many leave their jobs after a year or two of employment.
10. Who are the building service workers and what do they do?

### **What to Read**

- Barber.* Michigan Unemployment Compensation Commission, Detroit, 1947. 8 p.
- Beauty Operator.* Michigan Unemployment Compensation Commission, Detroit, 1948. 14 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern personal service occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	What does a sightseeing guide need to know about art?
<b>BUSINESS:</b>	How would a business course help a cafeteria worker (personal service) increase a firm's profits through the careful serving of foods?
<b>ENGLISH:</b>	Tell stories that you have heard or experienced about the misuse of everyday English (boners) by those who meet the public in personal service jobs.
<b>HEALTH:</b>	Why is good health of particular importance to those in personal service who must work near their customers?
<b>HOME ECONOMICS:</b>	Which of the personal service workers mentioned in this chapter would benefit by courses in home economics?
<b>LANGUAGES:</b>	What jobs in personal service are workers from other countries able to fill without knowing the English language?
<b>MATHEMATICS:</b>	Figure the annual income of a bellman in a large hotel for a 6-day week if he received \$20 per week in salary and \$7 a day in tips.
<b>MUSIC:</b>	Discuss the value of music in beauty shops and barber shops to both workers and patrons.
<b>OCCUPATIONS:</b>	In what different types of places in your community are personal service workers employed?
<b>SCIENCE:</b>	What personal service workers mentioned in this chapter would profit most by a high school course in chemistry?
<b>SHOPWORK:</b>	How does vocational training help chefs and cooks in personal service to keep their kitchens and pantries neat and clean?
<b>SOCIAL STUDIES:</b>	Why should a community license personal service workers?



*Employment Outlook in Hotel Occupations.* Bureau of Labor Statistics Bulletin 905. U.S. Government Printing Office, Washington 25, D.C., 1947. 14 p. (10 cents)

*Hotel and Restaurant Operation and Management* (Little Gold Business Book Series). Dahl Publishing Co., Stamford, Conn., 1947.

No. 1: *The Efficient Waitress Manual.* 64 p.

2: *The Efficient Waiters' Manual.* 47 p.

3: *The Efficient Maid's Manual.* 58 p.

4: *The Efficient Bellman and Elevator Operator.* 47 p.

*Opportunities in the Hotel Industry,* Shepard Henkin. Vocational Guidance Manuals, Inc., New York, 1953. 96 p.

*Practical Nurses and Hospital Attendants.* Women's Bureau Bulletin 203-5. U.S. Government Printing Office, Washington 25, D.C., 1945. 20 p. (10 cents)

*Waiter—Waitress.* Chronicle Guidance Publications, Moravia, N.Y., 1952. 4 p.

*Your Career in the Restaurant Industry.* National Restaurant Association, 8 S. Michigan Ave., Chicago 3, 1949. 16 p. (Free)

# CHAPTER 18 THE PROTECTIVE SERVICE

## OCCUPATIONS

**W**hen you and your family seek shelter in your home, it is reassuring to know that there is some protection for you beyond the mere four walls of the house and what you, your father, mother, and other members of the family can do in the way of protecting yourselves. If a fire breaks out and endangers the home, the fire department rushes its men and equipment to put out the blaze. They come not only to save and protect *your* family but also to protect the family and house next door. If a housebreaker attempts to enter your home, the police force takes action, not only to protect *your* home but also to prevent housebreaking elsewhere. If a foreign enemy threatens to drop bombs on your town, the Armed Forces protect the town by striking at the enemy with mighty weapons.

On the street, whether walking or driving a car, you are protected by the police who keep everyone within the law. Such laws require people to observe traffic lights, signals of the policeman on the corner, and sig-

nals of the watchman at the railroad crossing. If you ignore the traffic laws, you endanger the lives of others, and men in the protective service will take action against *you*. In banks and public buildings, guards and watchmen make regular rounds at night to see that all is well and to report fires or prowlers.

Protective service workers in general act as guards to protect the United States and its political units, to safeguard buildings and other property, and to insure the safety of individuals. These workers are classified in the list on page 280.

### FIREMAN (2-63)

Everyone knows the thrill of excitement as the big red fire engine speeds noisily down the street to put out some fire. Most of a fireman's time, however, is spent around a fire station maintaining equipment, cleaning the station, drilling, and waiting for calls. About 110,000 men earn a living as firemen. In small communities all firemen are volunteers. Large



cities employ trained firemen of good character, between 21 and 35 years of age, in good health, and with considerable physical strength. Firemen must know what to do efficiently and quickly, be level-headed in face of danger, able to handle panic-stricken persons, and willing to obey orders. Those who feel dizzy in high places should not enter this work.

In a large city system, firemen work in one of the following divisions:

The *administrative division* includes workers who handle personnel, correspondence, accounts, property, and reports.

The *division of apparatus*, under the charge of the superintendent of machinery, includes skilled machinists, automobile mechanics, blacksmiths, painters, inspectors, emergency men, battery electricians, molders, and stockmen to take care of apparatus.

The *fire prevention division*, under the charge of the fire marshal, conducts investigations of garages, film-storage houses, oil burners, exits, and safeguards. Firemen often inspect downtown motion-picture thea-

ters several times a week, and firemen are stationed in theaters with stage shows and movable scenery at each performance.

The *instruction division* offers training. The drillmaster may teach in a central fire school and also conduct unit drills and examinations in all fire stations. First-year firemen often attend the school for 30 days.

The *fire-fighting division* includes more than nine-tenths of the firemen who actually put out fires and rescue persons. Several companies of firemen make a battalion. A company, with a captain, lieutenant, sergeant, and 11 or more privates, is divided into two platoons for alternate daily duty. One platoon is always on duty at the engine house. On night duty, firemen sleep in company dormitories. If an alarm sounds, the watchman switches on bright lights and the firemen dress quickly, slide down the brass pole, take their places on the trucks, and are speeded to the scene of the fire.

The battalion chief arrives first and takes command at the scene of the fire. He finds out if any lives are

### PROTECTIVE SERVICE OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 2-61** Guards and watchmen, except crossing watchmen
- 2-62** Crossing watchmen and bridge tenders
- 2-63** Firemen, fire department\*
- 2-65** Policemen and detectives, except in public service
- 2-66** Policemen and detectives, public service\*
- 2-67** Sheriffs and bailiffs
- 2-68** Soldiers, sailors, marines, and coast guards\*

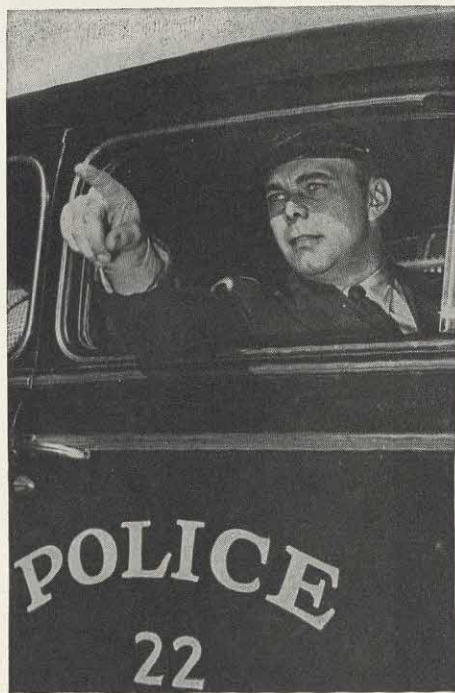
\* Occupation discussed in this chapter.



COURTESY THE EVENING STAR, WASHINGTON, D. C.

**Fireman (2-63).** There are 78,000 men who earn a living as firemen. In large cities trained firemen, 21 to 35 years of age, level-headed, and willing to obey orders, find employment. In small communities all firemen are volunteers.





COURTESY CHICAGO DAILY NEWS

**Police officer (2-66).** In the police traffic department the police officer visits inter-sections where traffic is heavy to see that regulations are being obeyed and to make recommendations for any changes.

in danger. The engine company connects the apparatus hose to the hydrant. Firemen enter the burning building. Ladder units place ladders to the upper floors. Ventilation experts open windows to create a draft and get rid of smoke and heat. The rescue squad, with an ambulance, stands ready to treat firemen or others. On multiple alarms, off-duty firemen may respond with additional apparatus.

Pay of firemen is generally adequate, and it is better in large cities

than in small towns. In many cities firemen reach top salary in 3 years. The assurance of security is one advantage of being a fireman. Few firemen are ever discharged, their wages are stable, and most of the men retire on a pension after 20 years of service. Competition is keen, however, because of the low turn-over among firemen.

No more than a grade school education is required of beginning firemen in some towns because firemen are generally trained on the job. They work with experienced firemen and learn about the use and care of equipment, methods of fighting fires, and first aid. Such training, however, does not prepare a man for any other kind of work than that of fire fighter.

### **POLICEMAN (2-66)**

Everyone knows the policeman by his uniform. Most policemen work for the city, county, or state government. In a small village a constable and night policeman may make up the entire police force. In a city many policemen work from a central police station and are assigned to various duties.

In a large city the police department divides its patrolled areas into "districts" or "precincts," each with a station in the charge of a captain. The chief of police, as head of the department, has full charge of personnel, property, and law enforcement. His deputy chiefs take charge of the major districts. Lieutenants

head platoons of policemen, and sergeants supervise the men on their beats. Patrolmen—the majority of the force—correspond to privates in the Army. A city force is divided into these divisions:

*Patrol division.* New workers start usually as patrolmen. A patrolman walks his beat, makes arrests, prepares reports, and testifies in court.

*Traffic division.* The men on the traffic squad control and direct street traffic on foot, motorcycle, or horseback, check on parking of cars, and give tickets to motorists who disobey traffic laws.

*Detective division.* Detectives and “plain-clothes men,” chosen from the ranks of patrolmen or other divisions, work out of uniform. They learn criminal habits and track down lawbreakers. Positions as detectives are filled by promotions or transfers of uniformed policemen on the basis of qualifications and length of service. Young boys who are curious about this work from reading and hearing stories about detectives will obtain their most reliable information directly from the local police headquarters.

*Crime-prevention division.* Policemen and policewomen work as special investigators to check juvenile delinquency, supervise public dance halls, locate missing youth, and deal with domestic-relations cases that require legal action.

*License division.* Field investigators check individuals and businesses that are required to have licenses to

conduct their work. Those without required licenses are arrested.

*Records division.* Workers keep files of criminals, missing persons, stolen property, second-hand dealers, and fingerprints.

*Motion-picture section.* Workers censor films.

Police service is an expanding field with opportunities for several thousands each year. About 189,000 men and 3500 women in our country earn a living on police forces. Beginning salaries range from \$2500 to \$3400 a year in metropolitan cities. In most places policemen work 8 hours a day for 6 days in the week.

There are no set standards for entry to the work of policeman. Age and resident requirements vary, and each city makes its own requirements as to education. High school graduation is often necessary. Most departments have entry training programs and a probationary period. Good physical condition is demanded. You can obtain further details by inquiring at your own police department.

Positions on the federal police force—such as in the U. S. Treasury Department and the national defense agencies—are all under Civil Service, but opportunities are few.

## MILITARY SERVICE (2-68)

On July 26, 1947, for the first time in history, the Armed Forces of the United States were unified by law into a single organization—the National Military Establishment, now



called the Department of Defense—headed by a single officer, known as the Secretary of Defense. Three departments were designated—Army, Navy, and Air Force—under the charge of the Secretary of Defense, who is a member of the President's Cabinet. Each of these three departments, under the Department of Defense, is headed by a secretary who is *not* a cabinet member—Secretary of the Army, Secretary of the Navy, and Secretary of the Air Force.

In 1948 the national policy of drafting young men 18 to 25 years of age concerned all boys, including those in high school. According to the Selective Service Act of 1948, boys were required to register with the local draft board as soon as they reached their eighteenth birthday. A high school boy, however, is not to be inducted unless he is graduated, drops out of school, reaches his twentieth birthday, or fails to do satisfactory school work. Those selected are required to serve 21 months in the Armed Forces, unless sooner discharged by the proper authorities. So far, voluntary enlistments are largely filling the ranks in all branches of service.

The Selective Service Act is still in force. A boy must register on his eighteenth birthday, or within 5 days after it, at any Selective Service Local Board, preferably the one nearest his home. When he becomes 19 years of age, the Board will mail him a questionnaire, which should be filled out carefully and returned to the Board

within 10 days. The Board will then proceed to classify him and will notify him concerning the class for which he is available for military service. He must always notify the Board in case of a change of address or any other change that might affect his classification.

Those who register should keep informed on any changes of policy or law through the local Selective Service Local Board, newspaper, radio, television, or other authorized source. There are so many changes in policy about drafting men for service in the Armed Forces, that young men approaching draft age must keep informed.

Men who voluntarily enlist in a branch of their choice for terms of 3, 4, 5, or 6 years are offered opportunities for specialized or technical training. They may apply for the Service Career Plan (Army) that trains men for more than 30 occupations. The *United States Navy Occupational Handbook* outlines 62 fields of work covering all phases of the Navy's occupational structure. Men who qualify may enlist, if there are openings, but are not required to do so. If they intend to enlist voluntarily, they should not delay because once a man is ordered to report for a physical examination, he cannot enlist in any branch, but must await induction.

For many years to come the Armed Forces will require enlistments for various types of work. Many young men will consider military service as



U. S. ARMY PHOTO

The cadets and midshipmen here are in training for military service. The West Point cadets were hosts to the midshipmen from Annapolis during an exchange visit. Each cadet and midshipman receives \$936 a year for four years.

a career because the pay is adequate, living conditions are good, opportunities are provided for study, and jobs are secure. The United States Armed Forces Institute (USAFI) provides correspondence courses for men in service. The subjects cover many areas from elementary work in arithmetic to advanced study in college subjects. Most families already know something about military service first-hand because so many of them include veterans of the last war. Further information may be obtained from your nearest recruiting station.

New arrivals at an Army Training Center go through "processing": obtaining Army clothing and equipment; taking shots (inoculations); undergoing physical examinations;

completing aptitude tests (Army General Classification Test Battery); and starting basic training. Eight weeks or more of basic training covers first aid, physical conditioning, and learning various military duties. After basic training, servicemen are assigned to one of the following: (1) regular duty; (2) advanced technical training (clerical, cooking, mess management, mechanical, supply work); or (3) advanced training in a school for a special military job—the kind of school or training depending upon the man's aptitudes.

Pay in the several military services begins at \$75 per month for *recruits* in the Army or *seamen recruits* in the Navy. In addition to this, they receive clothing, comfortable living





U. S. ARMY PHOTO

Girls too can join the armed forces. Here a girl recruit is turning in her equipment prior to leaving the bivouac area for base camp.

quarters, well-prepared meals, the finest of medical and dental care, and opportunities for recreation and education. Promotions are made after a certain amount of training. For example, in the Army a *private* receives \$80 per month; *private, first class*, \$90; *corporal*, \$100; *sergeant*, \$115; *sergeant, first class*, \$135; and *master sergeant*, \$165. Pay is similar for enlisted men in the Air Force and in the Navy.

**The Department of the Army.** The United States Army includes land, combat, and service forces. It also includes forces engaged in aircraft and

water transport activities. The army is organized, trained, and equipped mainly for prompt combat operations on land. The ground forces include many services: infantry, field artillery, armored command, coast artillery, corps of engineers, medical department, signal corps, chemical warfare service, ordnance department, quartermaster corps, etc.

Most army officers are trained at the United States Military Academy at West Point, New York. Each cadet entering the Academy signs an agreement to serve for a period of 4 years after graduation unless discharged sooner. The United States Military Academy is a well-known educational institution of college grade. The Federal Government established the Academy, under the supervision of the Army, to train young men for military service and for careers as officers in the Army. All appointments are made by the President of the United States, and each Senator and Representative in Congress is entitled to nominate candidates for three cadetships. A candidate must be a citizen of the United States, single (never married), and between 17 and 21 years of age. He must pass a rigid physical examination and meet educational and mental requirements that are set up. Upon graduation he becomes a Second Lieutenant in the Army. While studying 4 years at the Academy, a cadet receives pay of \$936 a year which is sufficient to meet his expenses. About 2500 cadets are enrolled.



U. S. MARINE CORPS PHOTO

The Marines, a branch of the Navy, "see the world." These Marines are holding an inspection under the big guns of an American battleship. Military service is one phase of protective service.

**The Department of the Navy.** The Naval Establishment consists of three principal parts: (1) the Navy Department, (2) the Operating Forces (fleets, seagoing forces, etc.), and (3) the Shore Establishment. The Department of the Navy includes the entire operating forces of the Navy, naval aircraft, the Marine Corps, and, during wartime, the Coast Guard. The several bureaus of the Navy Department are Aeronautics, Medicine and Surgery, Naval Personnel, Ordnance, Ships, Supplies

and Accounts, and Yards and Docks.

An integral part of the Navy, the *United States Marine Corps*, is responsible for maintaining a mobile force in readiness for use in operations involving shore objectives; maintaining detachments as a part of ships' crews on cruisers, aircraft carriers, and battleships; providing forces for the protection of American lives and property abroad; and providing garrisons for the safeguarding of navy yards and naval stations. Men generally enlist in the Marines for





OFFICIAL DEPT. OF DEFENSE PHOTO

These Air Force test pilots must be experienced, reliable, efficient, alert, technically trained in a tough curriculum. The Test Pilot School is located at Wright-Patterson Air Force Base, Dayton, Ohio.

"general duty" and are then classified according to their qualifications and ability.

In peacetime the *United States Coast Guard* operates as a service and police agency under the Department of the Treasury. During wartime the Coast Guard becomes part of the military forces under the Navy. The Coast Guard enforces the law on the high seas. It prevents smuggling, controls fisheries, enforces customs, patrols the seacoast in winter, and directs the state nautical schools. Young men from 17 to 25 years of age enlist for a period of 3 years to work on cutters, in lighthouses, on patrol boats and lightships, on ice-patrol duty, servicing buoys, etc. Officers of the Coast Guard are trained at the United States Coast Guard Academy, New London, Connecticut. A 4-year course of academic studies and military training leads to a degree of bachelor of science in engineering and a commission as Ensign in the Coast Guard. Cadets at the Academy receive \$936 a year. The number of appointments made depends upon the needs of the service. Examinations are held in May every year.

Many opportunities in the Navy beckon boys who wish to learn some trade or specialized occupation. Education in the Navy is a continuing process. Besides 62 types of vocational training, the men find many opportunities for study and advancement in the jobs to which they are assigned. The Navy attempts to give

every young man opportunity commensurate with his background, interest, ability, and aptitude.

A boy who enlists in the Navy begins as *seaman recruit* or *steward recruit*, or, in the Marine Corps, as a *recruit*. Current information about opportunities and courses of study may be obtained at your nearest recruiting station. Those who desire to become officers in the regular Navy will consider preparation at the United States Naval Academy.

The United States Naval Academy, Annapolis, Maryland, prepares young men to become line officers in the Navy. Students, known as "midshipmen," receive \$936 a year for 4 years. Five midshipmen may be appointed by each Senator, Representative, and Delegate in Congress, and by the Vice President of the United States. The President appoints others. Every candidate, however, must pass the entrance examination for admission. All candidates for the Academy are required to be citizens of the United States, between 17 and 20 years of age, single (never married), and physically and mentally fit. Upon graduation the midshipman is commissioned as Ensign in the Navy.

#### **The Department of the Air Force.**

The United States Air Force includes air combat and service forces. It is organized, trained, and equipped for prompt and sustained offensive and defensive combat operations in the air. Of the three major services, the Air Force has primary responsibility



for defending the United States against air attack and for providing necessary means for strategic air warfare. The Air Force cooperates with the Nation's ground and naval forces in supporting American foreign policy and maintaining peace. To accomplish this purpose, the Air Force maintains well-balanced forces at various places. In 1949, the Berlin air lift, known as "Operations Vittuals," made history for the Air Force. Men are trained for research, procure-

ment, production, supply, and maintenance. More than 200 skills are taught in the Air Force technical schools. Many such courses concern air traffic, control, maintenance, communications, weather, radar, photography, and similar work. Officers are prepared through the United States Military Academy, at West Point, New York, and at officers training schools. Those interested in the Air Force should apply to the nearest recruiting station for information.

### For Discussion

1. What workers outside of your home are employed to protect your family?
2. In general, what do protective service workers do?
3. Compare the divisions of a fire department as mentioned in this chapter with divisions of the fire department in your community.
4. Name the divisions of a large city police department and tell what these protective service workers do.
5. In your community, what qualifications are required to enter the police force?
6. What is the Department of Defense?
7. Describe briefly the three branches of military service.
8. In which branch of military service would you prefer to enlist and why?
9. Where is your Selective Service Local Board located?
10. How does a man qualify for training at West Point or Annapolis?
11. What are the peacetime duties of the Coast Guard?
12. Describe the women's branches of the U.S. military service. (See *The World Almanac*.)
13. What are the current Selective Service requirements for boys in school or college?

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern protective service occupations.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Study the design of uniforms of soldiers and sailors in the past and at the present time.
BUSINESS:	Discuss ways in which commercial laws and business laws protect citizens.
ENGLISH:	Discuss new literature written by veterans of World War II.
HEALTH:	Discuss physical examinations of policemen, firemen, and servicemen.
HOME ECONOMICS:	In what ways are the protective services of value to women left alone at home?
LANGUAGES:	Tell about, and if possible make available, recordings and handbooks used during World War II for teaching servicemen the languages of the world.
MATHEMATICS:	How would you explain the fact that on the General Classification Test given to men in the Army, one-third of the questions (50 out of 150) were problems in mathematics? (Try some of the problems.)
MUSIC:	Tell about the importance of group singing, radio music, and musical recordings to men in the armed services.
OCCUPATIONS:	Discuss bulletins, obtained from local recruiting stations, on how to enter the armed services.
SCIENCE:	Discuss scientific principles and methods that are used by protective service workers—use of chemicals in putting out fires, electric signals, atomic energy, etc.
SHOPWORK:	Discuss the many types of shopwork training offered to men in the U. S. Navy. (See <i>United States Navy Occupational Handbook</i> , 1950, free to schools upon request to the Bureau of Naval Personnel, Washington 25, D. C.)
SOCIAL STUDIES:	Explain the local organization of such protective services in your community as the police service or fire department.



**What to Read**

*Fighting Fire*, Burr W. Leyson. E. P. Dutton & Co., Inc., New York, 1943. 254 p.

*How to Choose That Career: Civilian and Military*, S. Norman Feingold. Bellman Publishing Co., Cambridge, Mass., 1954. 52 p.

*The Outlook for Women in Police Work*. Women's Bureau Bulletin 231. U.S. Government Printing Office, Washington 25, D.C., 1949. 31 p. (15 cents)

*Police Officer*. Personnel Services, Inc., Peapack, N.J., 1945. 6 p.

Recruiting Booklets. (Ask your nearest recruiting station for current information on enlistments in the Army, Navy, and Air Force.) (Free)

*Regulations Governing the Admission of Candidates into the United States Naval Academy (Annapolis) as Midshipmen and Sample Examination Questions*. Bureau of Navy Personnel, Department of the Navy, Washington 25, D.C. (Annually). (Free)

*The Story of the FBI*, the editors of *Look* (with introduction by J. Edgar Hoover). E. P. Dutton & Co., Inc., New York, 1947. 286 p.

*United States Military Academy, West Point*. Department of the Army, Washington 25, D.C. (Annually). (Free)

# CHAPTER 19 THE AGRICULTURAL, FISHERY,

## AND FORESTRY OCCUPATIONS

Agricultural, fishery, and forestry occupations are grouped together in the *Dictionary of Occupational Titles* because all of these jobs concern life in the open, dealing with living things—either plant or animal. This group does not include occupations of a professional and scientific nature in agriculture, fishery, and forestry, such as county agents and teachers of vocational agricul-

ture, fish and wildlife specialists, and foresters who are college trained. This group of occupations is based on practical rather than academic training and covers the physical work of (1) farmers, (2) fishermen, and (3) woodsmen. Each group will be discussed separately under Agricultural and Horticultural Occupations; Fishery Occupations; and Forestry, Hunting and Trapping Occupations.

### I. Agricultural and Horticultural Occupations

Agricultural and horticultural occupations concern the work of a dirt farmer. If the farmer specializes in horticulture, he may grow berries, raise fruit and nut trees, or operate nurseries or truck (vegetable) gardens. Scientific workers in agriculture are not included here because they are professional workers. (See Chapter 11.) The various types of agricultural and horticultural workers in this group are listed in the table on page 294.

Farming is a way of life for one out of six persons in the United States.

For the 1950 Census of Population a new definition of farm population was adopted: "civilian population living on farms, both urban and rural, regardless of occupation." According to this definition, the farm population includes all persons living on farms, as determined by the question, "Is this house on a farm (or ranch)?" The estimated civilian population living on farms in April 1950 was 25,058,000, and by April 1952 it was 24,819,000. Many people who live on farms today have jobs in nearby towns. The 1950 Census of



## AGRICULTURAL, HORTICULTURAL, AND KINDRED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 3-01 Cash grain farmers\*
- 3-02 Cotton farmers\*
- 3-03 Crop specialty farmers
- 3-04 Dairy farmers\*
- 3-05 Fruit farmers\*
- 3-06 General farmers\*
- 3-07 Animal and livestock farmers\*
- 3-08 Poultry farmers\*
- 3-09 Truck farmers\*
- 3-11 Farm hands, grain\*
- 3-12 Farm hands, cotton
- 3-13 Farm hands, crop specialty
- 3-14 Farm hands, dairy
- 3-15 Farm hands, fruit
- 3-16 Farm hands, general farms
- 3-17 Farm hands, animal and livestock
- 3-18 Farm hands, poultry
- 3-19 Farm hands, vegetable
- 3-30 Fruit and vegetable graders and packers
- 3-31 Blight control laborers and bindweed eradicators
- 3-32 Irrigation occupations
- 3-35 Farm mechanics
- 3-36 Farm couples
- 3-37 Farm managers and foremen
- 3-38 Nursery operators and flower growers
- 3-39 Nursery and landscaping laborers
- 3-40 Gardeners and grounds keepers, parks, cemeteries, etc.
- 3-41 Hatchery men
- 3-42 Laborers, hatchery
- 3-43 Stablemen
- 3-44 Barn bosses
- 3-47 Cotton ginner
- 3-48 Technical agricultural occupations
- 3-49 Other agricultural occupations

\* Occupation discussed in this chapter.



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

**Farmers (3-06)** on general farms work hard. Sometimes cord wood has to be sawed and split for home fires and water has to be carried from a pump in the yard. Modern machinery has, however, lightened some of the heavy work on small farms.

Occupations showed 4,306,000 farmers and farm managers and 2,400,000 farm laborers.

Since the advent of good roads and automobiles, the farm family goes to town for entertainment or shopping, just as city families do. Farm work provides security, healthful outdoor living, community spirit, leisure time in winter, and peace and independence that no work outside of a farm offers. Farming is primarily undertaken by men and boys of a community. A girl, however, should know something about farm life in order to know whether or not she would be happy as a farmer's wife.

**Life on a farm.** When the iron plow was invented, in 1797, a turning point was made in agriculture. Before that time, for thousands of years, farmers toiled to turn over the hard soil with blunt wooden plows. Since then, because of the invention of ingenious machines, the discovery of electricity, the advent of running water, and the discovery of scientific methods, farmers have been relieved of the back-breaking work that was once necessary. The modern farmer and his family now have more time to enjoy living.

The farmer's business centers in the farmhouse where the whole fam-



ily lives and helps with the farm work as needed. The farmer's wife busies herself with household duties, prepares hearty meals, and often tends her own flock of chickens in order to get "egg money" to spend for her personal wants.

Early hours for rising and retiring are usual on the farm because there are no hours off or holidays from tending living plants and animals. Every day, Sundays included, farmers must do the chores and take care of the livestock, but their hours may vary according to the season.

The farmer spends much of his time using machines, fertilizing the soil, fighting insect pests, cultivating crops, tending livestock, purchasing supplies, and selling products. His income is irregular because he must wait until after the harvest to sell products. His living expenses are considerably lower than those of city workers because he produces much of his own food.

Most farm children have the advantage of good-sized consolidated schools. School busses take the children considerable distances to and from these schools. Farm boys and girls now take part in many rural programs and often conduct their own farm enterprises as sponsored by the 4-H Club, FFA (Future Farmers of America), and the FHA (Future Homemakers of America). Some of their projects—raising their own chickens, pigs, vegetables, or fruits—are profitable and allow them to put away good-sized savings.

The farmer always has certain risks, however. A single frost, a ruining storm, a flood, or a drought might ruin valuable products that required weeks of work to grow. Plant diseases and pests prevent good crops unless the farmer uses sprays and dusting powders constantly to get rid of them. Each year the problem of what and how much to plant confronts him for decision. Should a crop that failed last year be planted again this year? What crops will find the best winter market? What crop would be the most profitable for his farm?

Compared with families in congested cities, the farm family is likely to have better health, better food, fresher air, more living space, more children, and more community activities. Young people learn to do their share of the work because there is real work to be done. In contrast, city children with few obligations at home find time on their hands and are likely to spend it in too much entertainment of a passive kind—*watching* movies and television and *listening* to the radio—without participating themselves.

**Importance of farming.** Since all of our food comes directly or indirectly from the soil, farming is the life line of the nation. Sixty percent of the total land area of our country—more than a billion acres—is farm land. Gross farm income in 1950 totaled more than 31 billion dollars, mainly from the West North Central, East North Central, South Central, and



COURTESY JOHN DEERE, MOLINE, ILL.

**A combine operator (3-49)** operates a machine that cuts and threshes standing grain in one operation. The machine separates the grain from the heads and blows off the chaff. Such machines save farmers a great deal of hard labor.

western states and particularly from Iowa, California, Texas, and Illinois, in that order. The farmer represents one out of every 10 men employed in the labor force.

**Farming as a career.** Boys most likely to enter farming are of five general types: (1) those whose fathers are farmers, particularly on large farms where there is an opportunity to help; (2) those brought up in rural areas who tend to like farming, know what to do, and are acquainted with farmers who need farm hands; (3) those who are conducting farm enterprises and projects at home that give them experience that is valuable in getting a job on a farm; (4) those who are working in supervised farming programs that give them valuable ex-

perience in finding work in agriculture; and (5) those who attend rural high schools and help on local farms, getting an opportunity to make jobs for themselves when they finish school.

It is unlikely that many boys will become farmers unless they are from one of these five groups. The majority of boys enter farming as partners with their parents or as farm hands on local farms.

Before choosing farming to make a living, a boy should be able to answer "Yes" to these questions: Have I lived on a farm long enough to know that I like it? Would I like to earn my living tilling the soil, raising animals, and marketing farm products?



A boy who goes into farming must be an industrious worker and a combination of shrewd businessman, good salesman, and practical mechanic. The extent to which he must actually work on the land itself depends upon the size of the farm, its mechanical equipment, the amount of money invested, and whether he is a sharecropper, tenant, manager, or owner. Although modern farm equipment can save much hard labor, it may not be available to the small farmer because of the expense, unless he is able to buy such equipment cooperatively with several other small farmers.

The movement of individuals away from the farm to the city has been caused in part by the use of farm machinery, which has gradually replaced large numbers of men who once made their living on large farms. In many rural areas there are more young men than there are opportunities for farming. This means that in normal times one-fourth to one-half of the boys born on farms must find other work in nearby towns.

A young man who accepts work as a hired hand on a farm may expect wages of anywhere from \$4 to \$6 a day. The average in 1948 was \$4.75 with board and \$5.30 without board. By strict economy, he may save enough to make a down payment on a farm of his own. A farm with a clear title may be purchased with a small amount of money, and the mortgage can be paid off by applying

monthly payments over a period of years. He may then buy more land or specialize in crops that he has found profitable.

Whether a farmer succeeds or fails depends upon many factors—his health, thriftiness, ambition, business ability, knowledge, and experience; the weather; and general economic conditions. Young men brought up in the city are not encouraged to become farmers unless they have had some experience living or working on a farm in vacations or other times. Many city boys, however, can find work in related farming activities if they have had some farm experience.

The type of training necessary for farming depends largely upon the individual, his needs, opportunities, ambitions, and the type of farm work with which he is familiar. Training for a career in agriculture may begin in a vocational high school where agricultural courses are offered. Boys are encouraged to become members of the 4-H Club and FFA and to work on agricultural projects while in school. Hiring-out on farms also provides a practical form of training for the type of agriculture that is carried on locally.

Every state has a land-grant college—once known as an agricultural college—that offers training in agriculture. In one state the land-grant college may be the *state university*, in another state it may be the *state college* or the *A. and M. college*. All types of agriculture courses are offered in these institutions—all of

which are approved and all of which offer 4 years of training for a degree. A degree, however, is not necessary for farming. Most of these land-grant colleges provide special courses and short courses for farmers and state residents of all ages who are doing agricultural work.

Anyone planning to enter farming as a career should talk with the local county agent for advice. County agents are well versed in such matters as the suitability of the land for particular kinds of farming, the accessibility of the farm to markets, etc.

**Kinds of farmers.** Farmers grow and harvest vegetables, fruits, grains, and other farm crops. They also raise poultry, livestock, and other animals, not only for their own tables but also as products for sale, as pets, and for exhibition purposes. These are the men who work on the land, the ones to whom we look for farm produce. A farmer is known by the type of product that he raises. The Department of Agriculture classifies farmers by several types, according to the product he produces which amounts to 40 percent or more of the money taken in through sales. For example, a farmer who receives at least 40 percent of his farm income from the sale of dairy products and dairy cattle is a "dairy farmer." A "wheat farmer" is a farmer who receives at least 40 percent of his farm income from wheat. Typical farmers are described briefly in the following paragraphs.

*A cash grain farmer (3-01)* raises grains that are sold for cash. For ex-

ample, a wheat farmer raises wheat on farms ranging in size from 250 acres to several thousand acres. Wheat farmers sow winter wheat in the fall to be harvested during the following summer, or they sow spring wheat early in the spring to be harvested during the late summer. A wheat farmer's crop is not perishable, does not spoil with age, and may be stored for long periods of time if kept in a dry place. Wheat farms are located in the Middle West because the land there is particularly favorable for wheat farming. Some cash grain farmers raise corn and oats as the chief grains, while others plant combinations of winter wheat, spring wheat, rye, flax, barley, and oats. Cash grain farms are found mainly in the North Central states.

*A cotton farmer (3-02)*, or cotton planter, grows cotton commercially. He oversees the plowing and preparing of the soil, the planting of seed, and the cultivation, picking, and marketing of the cotton. His helpers weed the plants, cultivate them, "chop" (thin out) cotton, pick the crop, and truck the cotton to the gin for processing. Cotton farms are all located in the Cotton Belt of the southern states because cotton needs a warm climate with a long growing season of at least 200 frost-free days.

*A dairy farmer (3-04)*, or dairyman, maintains and breeds dairy cattle to produce milk. He pays particular attention to cleanliness and the sanitary condition of his barns, stalls, clothing, and hands. He sterilizes all



milk containers with steam or boiling water.

Fluid milk is usually his main product, and he sees that his cows are milked twice a day by hand or by machine. The dairyman places the milk in containers to be picked up by collecting centers of central stations. In such stations the milk is pasteurized, bottled, and refrigerated; or it may be converted into butter, cheese, or powdered milk, which is generally shipped long distances away.

A temperate climate is especially favorable to dairy farming because hay and pasture lands are plentiful and the animals and their products do not have to withstand excessive heat. Although dairy farmers are located in every state, especially near large cities, the greatest number are located in the North Central states, particularly around the Great Lakes. Probably your grocer sells butter that has been shipped from Wisconsin and Minnesota.

*A fruit farmer (3-05)* grows small fruits on plants (strawberries), vines (grapes), bushes (blackberries), or trees (apples). Bad weather conditions, insect pests, blights, and growth of weeds keep him busy during the growing season. New trees require his energetic care for several years before they bear fruit. During the harvest season the fruit farmer employs extra workers and helpers to pick, haul, grade, pack, and market the fruits. The best land for fruit farming is in areas where the growing season is fairly long, the climate

is not too cold, and the winters are not too severe, such as on the West Coast, the East Coast, in Florida, around the Great Lakes, and in the Mississippi Valley. California grows approximately one-half of the nation's commercial supply of fruits and nuts.

*A general farmer (3-06)* on a well-organized general farm makes a living in all parts of the country. He raises and harvests crops and raises and breeds livestock and poultry. A farmer is considered a "general farmer" so long as no one kind of his farm products yields as much as 40 percent of his total farm income.

*A livestock farmer (3-07)*, or stock rancher, raises thousands of cattle, sheep, hogs, and horses. Stock ranchers are located where feed is easily and extensively grown, as on the pasture lands of the West, Middle West, and South (mostly in Texas, Oklahoma, Kansas, Colorado, and Wyoming). Sheep raisers are found chiefly west of the Mississippi River, where there are plenty of grasslands. Farmers in all parts of the country raise hogs, but the Corn Belt of the Middle West (around Iowa) is the section where the greatest number of hogs are produced because corn is plentiful in this section for fattening hogs ready for marketing to the packing plants.

*A poultry farmer (3-08)* raises and breeds chickens, ducks, geese, and turkeys commercially for their meat and for production of eggs for market. Women as well as men manage





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY KNELL

**Farm hands, fruit (3-15)** pick apples, pears, and peaches. These unskilled workers must take care not to bruise the fruit or break the tree branches. Many fruit pickers work only part time.





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY KNELL

**The poultry hatchery man (3-41)** operates a hatchery to raise and sell chicks. He buys fertile eggs, loads them into the incubator trays (upper trays), and waits 21 days for the chicks to hatch. Meantime the eggs must be turned, which is done automatically by tilting the trays. From the lower trays he removes and packs the newly hatched chicks to special shipping boxes in which the chicks are sent through the mail to buyers.

poultry farms. In general, a poultry farm costs less to manage than other types of farms, even though a farmer purchases the feeds and grains instead of raising them. American farmers in all parts of the country raise poultry at least on a small scale, since the labor required is a part of the maintenance of a farm. Most chickens are raised on the poultry

farms of Iowa, Missouri, Illinois, and Texas. Most eggs are marketed from the farms of Iowa, Minnesota, Pennsylvania, Missouri, Texas, and Illinois.

*A truck farmer (3-09), or market gardener, grows vegetables, such as beans, corn, peas, rhubarb, and tomatoes, and sells these products to grocers, to be sold as fresh vegetables,*

or to canning factories for canning. His work is seasonal, except in the warmer climates. He can get along very well on fairly small tracts of land—2 to 50 acres. A truck farmer located near an industrial center and close to markets can manage his farm alone and on small capital, although he may need helpers for sowing seeds, weeding, gathering vegetables, and preparing products for market.

*A farm hand (3-11)* represents the largest single group of unskilled laborers. Two million hired hands work on farms—milking the cows, doing the haying, cutting timber, sawing wood, cutting out dead trees and limbs in orchards, cleaning hen houses and barns, and doing the necessary chores about a farm. The use of farm machines, however, has driven many farm workers to find other employment. Many farm ma-

chines have been introduced to handle the hard physical labor necessary at harvest time. Cultivators, binders, hay stackers, combines, and even cotton pickers have reduced the need for large crews of laborers to handle farm work. With the farm machines of today, relatively few workers can now handle an ordinary harvest. On a wheat farm, for example, this is the difference in the amount of work *one man* can do in *one day* depending upon the kind of farm equipment he uses:

Using 4 horses and a 70-foot binder, he can harvest 15 acres.

Using a tractor and an 8-foot binder, he can harvest 25 acres.

Using a tractor and a 10-foot binder, he can harvest 35 acres.

Using a tractor and a 6-foot combine, he can *harvest and thresh* 15 to 25 acres.

## II. Fishery Occupations

The Pilgrims were undoubtedly attracted by the possibilities of fishing in a new country. Many of their descendants still fish for cod and had-dock off Gloucester, Massachusetts, and around Cape Cod. This New England industry has become famous because dried codfish, fillets of had-dock, fresh fish, and even live lobsters are now shipped everywhere.

Those who live near a fishing port have an opportunity to observe fishermen in their sturdy fishing craft and to examine the type of fishing gear that they use, as well as the na-

ture and the size of the catch. The greatest fishing centers are in the vicinity of Portland, Maine; Gloucester and Boston, Massachusetts; Buffalo and New York, New York; Erie and Philadelphia, Pennsylvania; Baltimore, Maryland; Jacksonville, Florida; Savannah, Georgia; Mobile, Alabama; New Orleans, Louisiana; Galveston, Texas; Cleveland and Sandusky, Ohio; Chicago, Illinois; Bay City, Michigan; San Diego and San Francisco, California; Portland, Oregon; Seattle, Washington; and Ketchikan, Alaska. More than 66,000





COURTESY LIBRARY OF CONGRESS

**Fishermen (3-87)** are likely to be sons of fishermen because fishing is the main occupation of the region in which they grew up. Aboard a trawler near Provincetown, Massachusetts, these fishermen select mackerel, whiting, or halibut, cut off their heads, and throw the fish into an ice-filled hold.

men earn a living at fishing and are classified as shown in the list below.

A fisherman is known by the type of gear he uses in fishing or by the kind of fish or sea life he catches. Everyone knows that a "line fisherman" is a man who catches fish with a fishline. Fishermen also use many types of nets. A "gill net" is a net that catches fish by their gills when they swim into it. A "purse seine" is a net used in catching deep-water fish. A "haul," "drag," and "beach seine" are nets to catch shallow-water fish. A "pranzella net" is a net stretched between two fishing vessels and towed along the bottom.

On shore, an important task of the fisherman is taking care of his expensive nets. The nets get constant care and mending to preserve them. Even with care, the nets seldom last more than a year. Deep-sea fishermen are away from home a week or two at a time, but those who fish inshore go home more often. Fishermen's receipts depend upon the amount of

money received from a catch, and they are usually well paid on a share basis. They have time to read, sing, listen to the radio, and live a life of independence. This important industry requires strong men.

Little is generally written about fishing as a career because few persons think of following the sea unless they are sons of fishermen who generally are familiar with fishing. The sons of fishermen are most likely to enter this occupation because the attraction of life on the sea holds them to the fisherman's tasks. They like it. The work is too strenuous for women, except as a hobby. However, both men and women work at jobs related to fishing, such as the canning, packing, and marketing of fish.

To qualify as a fisherman, a person must like heavy out-of-door work, be willing to live as fishermen do, and be able to learn the necessary skills—managing boats in all kinds of weather, understanding weather signs, knowing the habits of many types of fish, and having a practical knowledge of the outdoors. Fishermen need very little formal school training, but they must learn a great deal about catching fish from experienced fishermen.

### FISHERY OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 3-87** Fishermen and oystermen
  - Net and seine fishermen\*
  - Line fishermen
  - Fishermen, miscellaneous gear
  - Fishermen, specific kind of fish\*
  - Seal fishermen
  - Miscellaneous fishing occupations
- 3-88** Sponge and seaweed gatherers\*
- 3-89** Other fishing occupations

\* Occupation discussed in this chapter.

### OTTER TRAWL FISHERMAN (3-87)

Early in this century the fishing industry developed mechanized fishing gear to compete with domestic industry's mass production methods and to



replace the expensive hand-fishing methods. The otter trawl, for example, is a highly effective piece of fishing gear for use on the high seas. It was introduced into the New England bank fisheries in 1905 for the capture of cod, haddock, hake, and other bottom fish, formerly caught by hand trawls and lines. In using this huge cone-shaped net, the otter trawl fishermen work on a power vessel with a crew of some 20 men. They draw the net over the ocean floor behind the vessel, and the net envelops the fish as the vessel moves forward. Engines are used to raise the trawl, and one catch may bring in as much as 50,000 pounds of fish. A smaller number of otter trawl fishermen can catch a larger quantity of fish in a shorter time than line fishermen can accomplish. On the deck the fishermen clean and ice the fish and speed them to market where they are sold fresh. An otter trawl fisherman is classified with "net and seine fishermen."

#### **LOBSTER POT FISHERMAN (3-87)**

A lobster pot fisherman is classified as a "fisherman, specific kind of fish." Lobster fishermen in Maine work in small boats near the shore. Their traps—oblong lath boxes called "lobster pots"—have funnel-like openings into which the lobsters crawl backwards. Then they are unable to get out. The lobster fishermen use motorboats and visit their lobster pots frequently to take out the live

lobsters. The fishermen then transfer the live lobsters to floating rafts ready for market. The lobsters are then sold or packed in ice and transported to all parts of the country alive. Dead lobsters are not sold, as lobsters must be cooked alive.

#### **OYSTER FISHERMAN (3-87)**

The oyster fisherman is another of the classification "fisherman, specific kind of fish." Oyster fishermen grow oysters in shallow, warm waters. To create oyster farms, the fishermen actually plant young oysters where they will grow. In gathering them, the oysterman uses 16-foot tongs, or dredges, to loosen the oysters from the beds and bring them to the surface. They unload the oysters at an oyster house where an *oyster shucker* (6-04) opens them and grades them into standard sizes for shipping.

#### **SPONGE GATHERER (3-88)**

A sponge gatherer, either wading in shallow water or kneeling in a boat, uses hooks on a long pole under water to tear sponges loose from where they grow. Sponges are the skeletons of a low-type animal. The sponges are thrown into tanks of water to decay. After being washed out, they are ready for market.

Sponge divers, who put on diving helmets and gather sponges from the bottom of the sea by hand, are skilled workers rather than fishermen.



COURTESY U. S. FOREST SERVICE

A hunting and trapping guide (3-96) serves sportsmen and hunters, helps to plan trips, pitches camp, does the cooking, and does the heavy work. The forest ranger (0-35) (kneeling) is checking a buck at a hunting camp. As the code number shows, the forest ranger is a professional worker and is classified with the "Natural scientists." (See table on page 165.)

### III. Forestry, Hunting and Trapping Occupations

Certain forestry workers who are college trained—forester (0-38), junior forester (0-38), forest ranger (0-38)—are not included in this group because they are professional workers. The nonprofessional forestry workers need little academic schooling, but their work is related to agriculture, and therefore, they are included in the classification of agricultural, fishery, and forestry occupations. The

list on page 308 shows typical workers in this group.

These nonprofessional forestry workers are employed to help develop and care for the forest and to grow and gather forest products. Also included are those who guide hunting and trapping parties and those who engage in the hunting and trapping of wild animals and game as an occupation.





COURTESY U. S. FOREST SERVICE

**Trappers (3-97).** Men in the woods trap game for skins, for meat, or to sell alive. They conform to laws and regulations concerning trapping, bait their traps, and regularly inspect them for captured game. These boys are holding a gray fox caught in a trap on one of their trap lines.

### FORESTRY (EXCEPT LOGGING) AND HUNTING AND TRAPPING OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

- 3-91 Forestry occupations, except logging  
Chipper, turpentine\*
- 3-96 Hunting and trapping guides\*
- 3-97 Hunters and trappers\*

\* Occupation discussed in this chapter.

**CHIPPER (3-91)**

The chipper works in southern forests, collecting crude turpentine gum from trees to be distilled into resin and turpentine. Turpentine is used mostly as a paint thinner. The chipper uses a hack (special ax) to cut narrow V-shaped grooves in pine trees to expose the resin ducts. He then hangs a quart-sized cup to a nail to catch the flow of resin. Every 2 or 3 weeks in midsummer he collects the resin without injury to the trees. This unmechanized and unskilled occupation will give employment to many laborers for years to come.

**HUNTING GUIDE (3-96)**

The hunting guide takes parties of sportsmen on hunting and fishing trips. He knows the wild country,

carries equipment, pitches camp, cooks for the party, and tends to their needs. The hunting guide needs little formal education but must be experienced in living in the open and have a knowledge of wildlife.

**TRAPPER (3-97)**

The trapper earns his living in wild areas by trapping game for the skins, for the meat, or to sell alive. He must observe the state laws and take care not to injure the skins if he expects them to bring a good price in the market. Because the trapper often lives alone in isolated places for weeks on end, a love of nature, experience with wildlife, and not minding solitude are more important as a background than a formal education.

**For Discussion**

1. Mention some agricultural and horticultural occupations in your community.
2. Describe life on a farm.
3. Why is farming important to our nation's welfare?
4. Who are the agricultural workers?
5. Who should go into farming?
6. What training is offered in your state agricultural college?
7. Describe three types of farmers.
8. Who are the fishery workers?
9. Who are the forestry workers?
10. How do forestry workers in this classification differ from professional foresters?



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern agriculture, forestry, and fishing.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Bring to class prints of famous paintings of farmers, foresters, or fishermen.
BUSINESS:	Which of the following subjects do you think is most useful to a farmer: business arithmetic, business law, business organization, or business English?
ENGLISH:	Bring to class three or four farm journals, and compare them as to content, reading interest, level of writing, and use to a farmer.
HEALTH:	Discuss outdoor occupations versus indoor occupations from a health standpoint.
HOME ECONOMICS:	Compare the duties of a homemaker in the city with those of a homemaker on a farm.
LANGUAGES:	Under what conditions might a knowledge of a foreign language help a farmer in running his farm and in buying and selling his products?
MATHEMATICS:	Make up a form on which a farmer who sells eggs could figure his profit on egg production for a year.
MUSIC:	Make a collection of recorded American folk songs and explain how they came to be written and sung.
OCCUPATIONS:	What occupational opportunities are available on farms in your state? (Ask a representative of your class to write to the state agricultural college for printed materials.)
SCIENCE:	Demonstrate in the science laboratory the Babcock test for butterfat as used by dairymen, a balanced aquarium, or hatching eggs in an incubator.
SHOPWORK:	What practical use would a farmer make of a shop-work course in vocational agriculture?
SOCIAL STUDIES:	In what ways has the change of our country from an agricultural to an industrial nation affected the standard of living?

### What to Read

- Agricultural and Biological Sciences*. National Roster Pamphlet 1. U.S. Government Printing Office, Washington 25, D.C., 1947. 39 p. (15 cents)
- Directing Vocational Agriculture Day-school Students in Developing Their Farming Programs*. U.S. Office of Education Bulletin 229. U.S. Government Printing Office, Washington 25, D.C., 1944. 72 p. (15 cents)
- Employment Possibilities in the Fish and Wild Life Service*. Fish and Wildlife Service, U.S. Department of the Interior, Washington 25, D.C., 1945. 13 p. (Free)
- Fish Production*, Josephine Perry. Longmans, Green & Co., Inc., New York, 1940. 104 p.
- Forestry and Its Career Opportunities*, H. L. Shirley. McGraw-Hill Book Company, Inc., New York, 1952. 492 p.
- Jobs in Horticulture*, Gilbert W. Wernicke. Science Research Associates, Chicago, 1946. 48 p.
- Matching Men and Farms*, Franklin R. Zeran. U.S. Office of Education Bulletin 229. U.S. Government Printing Office, Washington 25, D.C., 1944. 38 p. (10 cents)
- Opportunities in Horticulture*, C. Owen Brantley. Vocational Guidance Manuals, Inc., New York, 1953. 96 p.



## CHAPTER 20 THE SKILLED OCCUPATIONS—

### THE CRAFTSMEN

Skilled workers are craftsmen who, throughout the centuries, have created things with their hands. The skill of human hands created the Seven Wonders of the World, but the ravages of time, fires, and earthquakes have destroyed all except the pyramids. The pyramids still remain as monuments to craftsmanship. The largest pyramid, built 5000 years ago by Cheops as a burial tomb for himself and his queen, required the labor of 100,000 men for 20 years to complete.

In the United States skilled workers have created many *modern* wonders of craftsmanship. For example, the skyscraper is an American creation. The first skyscraper was built in Chicago in 1884. The difference between a skyscraper and other high buildings is that the skyscraper has an iron-and-steel framework that does not require supporting walls. After the framework is in place, the walls are added, often at the top of the building first.

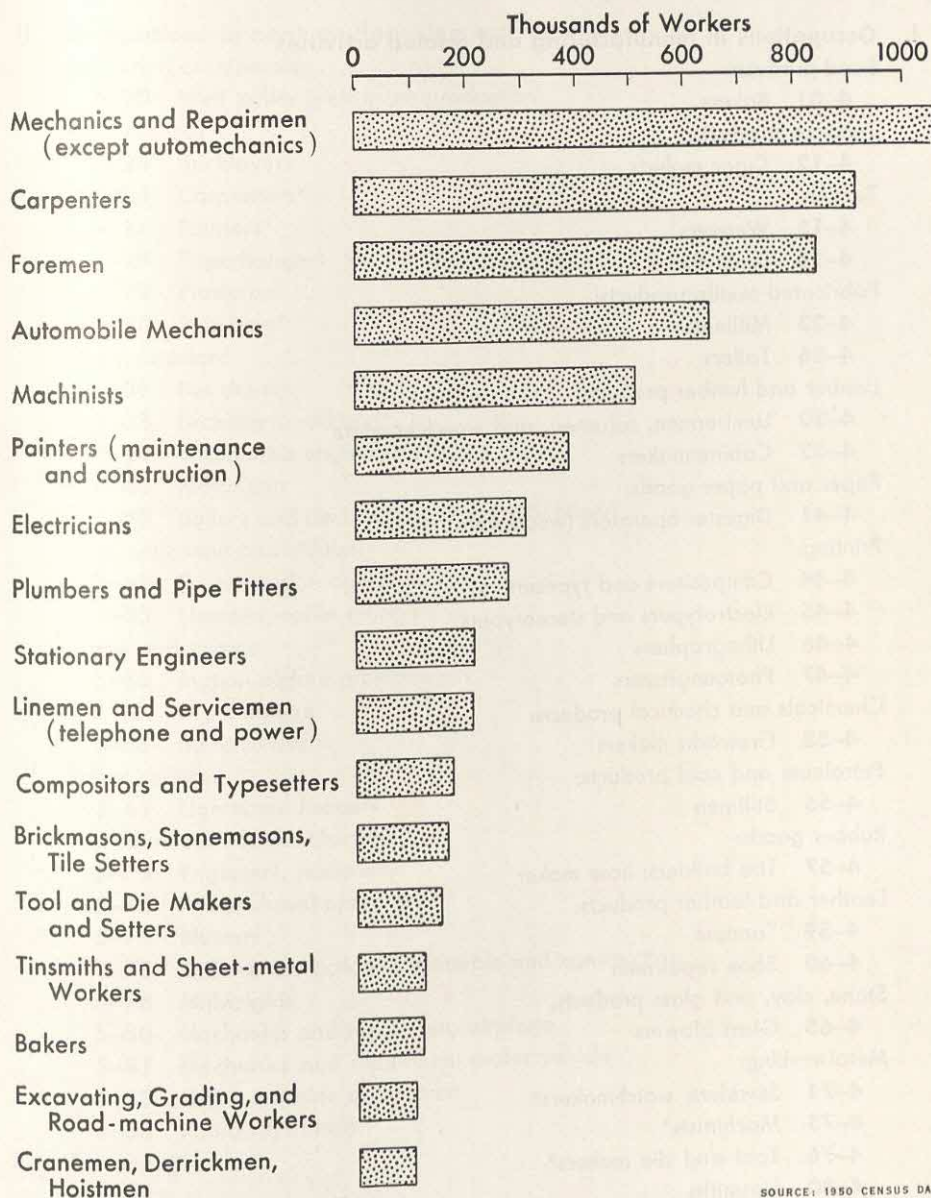
The Empire State Building in New York City, begun in 1930, is the

tallest building in the world—102 stories, reaching a height of 1250 feet. Among other modern world wonders of great size created by skilled hands should be mentioned such engineering projects as the Grand Coulee Dam in Washington, the Hoover (Boulder) Dam in Arizona-Nevada, the Panama Canal, the Golden Gate Bridge in San Francisco, and the Holland and Lincoln Tunnels in New York City.

On such projects the craftsmen are the skilled workers who actually do the work required in their skilled trades. They work under the supervision of engineers and other professional workers and managers who have over-all charge of manufacturing processes and construction projects. There are thousands of skilled occupations. A complete list of skilled jobs is given in the *Dictionary of Occupational Titles*, Volume II, on pages 81–165. A list of apprenticeshipable trades (skilled) is included in Chapter 8 of this book. Some of the jobs in this group are listed on pages 314 and 315 to show the types of

## MAJOR GROUPS OF SKILLED WORKERS

(Occupations with 100,000 or more workers)



Skilled workers are craftsmen who earn a living by making things with their hands. Most skilled workers are employed in the mechanical and building trades. All of our tall buildings, machines, dams, and bridges were built by the combined efforts of various craftsmen in skilled work. (See the list on pages 314 and 315 of the variety of occupations in the group of skilled workers.)



## SKILLED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

### I. Occupations in manufacturing and related activities

Food products:

4-01 Bakers

Tobacco products:

4-12 Cigar makers

Textiles:

4-15 Weavers

4-16 Loom fixers

Fabricated textile products:

4-23 Milliners

4-26 Tailors

Lumber and lumber products:

4-30 Lumbermen, raftsmen, and woodchoppers

4-32 Cabinetmakers

Paper and paper goods:

4-41 Digester operators (wood pulp)

Printing:

4-44 Compositors and typesetters

4-45 Electrotypers and stereotypers

4-46 Lithographers

4-47 Photoengravers

Chemicals and chemical products:

4-53 Fireworks makers

Petroleum and coal products:

4-55 Stillmen

Rubber goods:

4-57 Tire builders; hose maker

Leather and leather products:

4-59 Tanners

4-60 Shoe repairmen

Stone, clay, and glass products:

4-65 Glass blowers

Metalworking:

4-71 Jewelers; watchmakers\*

4-75 Machinists\*

4-76 Tool and die makers\*

4-80 Tinsmiths

Electrical equipment:

4-97 Electricians

Miscellaneous products:

5-08 Opticians

Miscellaneous manufacturing:

5-16 Furniture finishers

\* Occupation discussed in this chapter.

## **II. Occupations in nonmanufacturing activities**

### **Extraction of minerals:**

- 5-20** Well puller (petroleum production)

### **Construction:**

- 5-24** Bricklayers
- 5-25** Carpenters\*
- 5-27** Painters\*
- 5-28** Paperhangers
- 5-29** Plasterers
- 5-30** Plumbers\*

### **Transportation:**

- 5-36** Bus drivers
- 5-38** Brakemen, railroad\*
- 5-41** Locomotive engineers
- 5-43** Motormen
- 5-48** Sailors and deckhands (except U.S. Navy)

### **Communication and utilities:**

- 5-51** Power-station operators
- 5-53** Linemen; cable splicers

### **Trade and service:**

- 5-55** Motion-picture projectionists
- 5-57** Dry cleaners
- 5-58** Meat cutters

### **Public service:**

- 5-61** Lighthouse keepers

### **Miscellaneous nonmanufacturing:**

- 5-72** Engineers, stationary
- 5-73** Power-shovel operators
- 5-74** Blasters
- 5-75** Drillers, extraction of minerals and construction
- 5-78** Millwrights
- 5-80** Mechanics and repairmen, airplane
- 5-81** Mechanics and repairmen, motor vehicles\*
- 5-83** Office-machine servicemen
- 5-83** Radio repairmen

## **III. Foremen\***

- 5-91** } Foremen, manufacturing
- 5-92** }
- 5-93** Foremen, extraction of minerals
- 5-95** Foremen, transportation, communication, and utilities

\* Occupation discussed in this chapter.





COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**Upholsterer (4-35).** An upholsterer secures the springs, padding, and under parts of a chair before he covers it with material. It requires 3 to 4 years of apprenticeship in an upholstery shop to become a skilled upholsterer.

skilled work done in manufacturing and nonmanufacturing activities.

It is the skilled workers who bake our bread, make our clothes, repair our shoes, make the machines, repair manufactured goods, transport us to school and work, build our homes, repair our buildings, and do the manual work that requires skilled hands and practical experience in a particular trade.

More than 7½ million men find employment as craftsmen and skilled

workers in these and other trades. Relatively few women (236,000) take up skilled work, and those who do are mostly forewomen, tailoresses, bakers, typesetters, or inspectors.

Most craftsmen learn their skills through apprenticeship, under the supervision of a journeyman (fully trained worker). A few trades are so highly specialized that training opportunities are scarce. The higher the skill required, the fewer journeymen there are and the more time it

takes to become skilled. For example, it takes 5 to 6 years to train such skilled workers as electricians, electrotypers, engravers, lithographers, patternmakers, photoengravers, printers, printing pressmen, ster-

eotypers, and tool and die makers. The number of skilled workers is so large, and the work they do so varied, that only a few examples of the occupations requiring skilled work can be covered in this chapter.

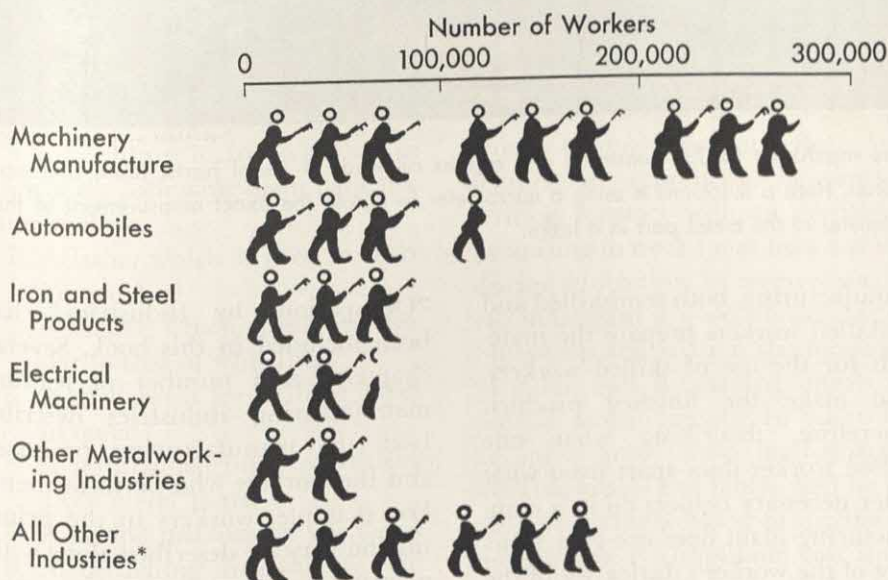
## I. Occupations in Manufacturing and Related Activities

A large proportion of the 8 million workers employed in all manufacturing industries are skilled workers or craftsmen. To understand the duties and qualifications of skilled workers in manufacturing industries, it is necessary to learn something about the

manufacturing processes and related occupations.

Generally, manufacturing consists of a series of operations through which workers process raw materials or semimanufactured materials into finished products. In any field of

EMPLOYMENT OF MACHINE-SHOP WORKERS

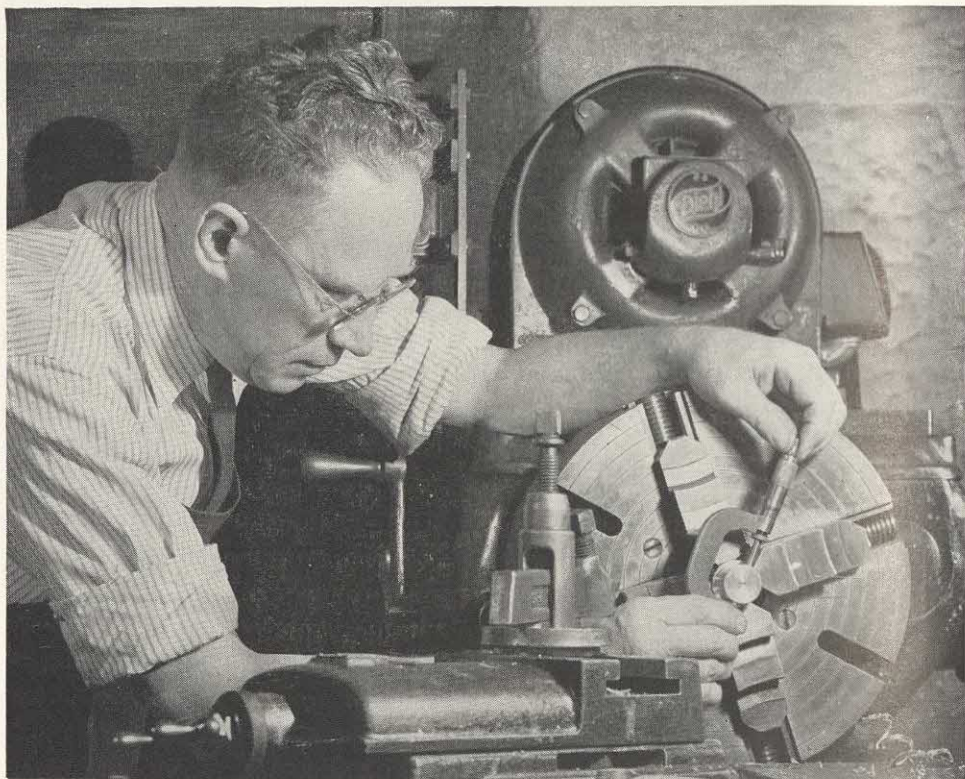


\*Includes Railroads, Textile-mill Products, etc.

SOURCE: BUREAU OF LABOR STATISTICS (1947)

The majority of machine-shop workers are machine-tool operators. There are fewer machinists and still fewer tool and die makers. The number of workers in the various industries which require machine-shop workers is shown here.





COURTESY U. S. DEPT. OF LABOR

**The machinist (4-75)** constructs and repairs all kinds of metal parts, tools, and machines. Here a machinist is using a micrometer to obtain the exact measurement of the diameter of the metal part in a lathe.

manufacturing, both semiskilled and unskilled workers prepare the materials for the use of skilled workers, who make the finished product. Therefore, describing what one skilled worker does apart from what other necessary helpers do in a manufacturing plant does not give a picture of the worker's duties nor of the manufacturing process.

In order to show how skilled work harmonizes with semiskilled and unskilled work in carrying out certain manufacturing processes, Part III,

"Occupations by Industries," has been included in this book. Several chapters on a number of leading manufacturing industries describe both the manufacturing processes and the workers who perform them. For example, workers in the printing industry are described along with printing processes, so as to give a picture of the worker in his environment and what he contributes to the printing process. With such information it will be easier to see what each worker does and why large groups of

skilled workers are concentrated in certain branches of an industry.

Skilled work in manufacturing activities, however, is not all "process work." For example, the machinist in a metalworking industry has a variety of duties, as will be shown in the following description of his work.

### MACHINIST (4-75)

In a machine shop a machinist makes and repairs all kinds of machines, metal parts, and tools. His work may be in a job shop, handling whatever jobs come in, such as small manufacturing jobs or repair work; or he may be employed in a production shop that manufactures materials on a large scale for commercial use. In the larger shops he will use machine tools operated by power and partly or wholly automatic.

The machinist learns to use one or more of the following eight basic machine tools:

1. A lathe, which is used in turning work
2. A shaper, which does work similar to that of whittling
3. A drill press for drilling holes in metal
4. A milling machine for cutting away metal parts
5. A sawing machine to saw metal
6. A broaching machine to enlarge holes
7. A grinder to do coarse grinding work
8. A honing and lapping machine for extremely fine grinding

These heavy machines are the tools of the machinist's trade, and by properly using them he can work metal in any way he sees fit. Work on these machine tools is skilled because the worker must be highly accurate to the thousandth of an inch.

Some machinists specialize in certain types of work and become lathe operators, automobile machinists, radio machinists, instrument makers, etc. A *bench machinist* (4-75) uses hand tools and machine tools to fit and assemble machines and equipment and fasten them with screws and bolts. The *tool-and-die maker* (4-76) makes machine-shop tools (like the eight mentioned above); dies, jigs, and instruments; and also dies for forging and stamping metal in different shapes, as, for example, automobile fenders.

A young man learns to be a machinist through apprenticeship. As a learner, or apprentice, he signs a written contract with an employer, promising to work for at least 4 years, during which time he receives wages. He must gain a good knowledge of blueprints and written specifications to guide him in shaping metals to precise measurements. In addition, he must know shop mathematics, working charts and tables, and be familiar with the working properties of such metals as aluminum, cast iron, wrought iron, and steel. At the end of the training period he becomes a "journeyman machinist," or a skilled worker, ready to earn full union wages.





COURTESY ST. PAUL (MINN.) VOCATIONAL SCHOOL

**Watch repairmen (4-71)** clean, adjust, repair, and oil watches. Note the eyepiece and delicate tools they use. A number of trade and vocational schools teach watchmaking, or training may be taken in 3 to 4 years of apprenticeship.



COURTESY U. S. DEPT. OF LABOR

A **jewel setter (4-72)** sets a stone in a ring or other article by placing the jewel in the hole by hand. Then, with a burnishing tool, he crimps the edges of the hole into the grooves in the jewel to secure it.

### **WATCHMAKER (4-71)**

A watchmaker—also known as a watch repairer—cleans, adjusts, and repairs watches and, usually, clocks. Using an eyepiece, he examines the parts to discover any defects, replaces worn or broken parts, adjusts the timepiece, and puts it in order generally.

A shortage of these skilled workers has existed since World War II, but many newly trained watchmakers are now entering the field. The fact that

almost everybody carries a watch means that a good watchmaker will have plenty of customers for years to come, and fairly steady work the year around. Few persons, other than watchmakers, are able to do anything to a watch, once it goes wrong, and machines can never take the watchmaker's place because the work must be done by hand.

Watchmakers set their watches according to "standard time"—that is, according to signals transmitted from the Naval Observatory at Washing-



ton, D. C. In 1883 the United States adopted standard time in four zones—Eastern, Central, Mountain, and Pacific. Watch repairers must have good training, good eyesight, good mechanical aptitude, steady nerves, and a great deal of patience to work on very small and delicate mechanisms and avoid damaging expensive timepieces.

Experienced watchmakers are likely to earn from \$70 to \$100 a week, but if they manage their own shops, their earnings may be much higher than this.

There are no well-defined educational requirements for watchmakers. The trade may be learned through 4 years of apprenticeship, or

in any of the more than 125 schools established throughout the country. The time required for training in the schools varies from 18 to 24 months. Some schools also teach engraving, jewelry making, stone-setting, and gemology.

A few states require licenses obtained by examination—Indiana, Iowa, Minnesota, Oklahoma, Oregon, and Wisconsin. The Horological Institute of America, P. O. Box 4355, Washington, D. C., and the United Horological Association of America, 1549 Lawrence Street, Denver 2, Colorado, grant certificates to watchmakers who can pass their examinations. Watch repairmen find work in any good-sized city.

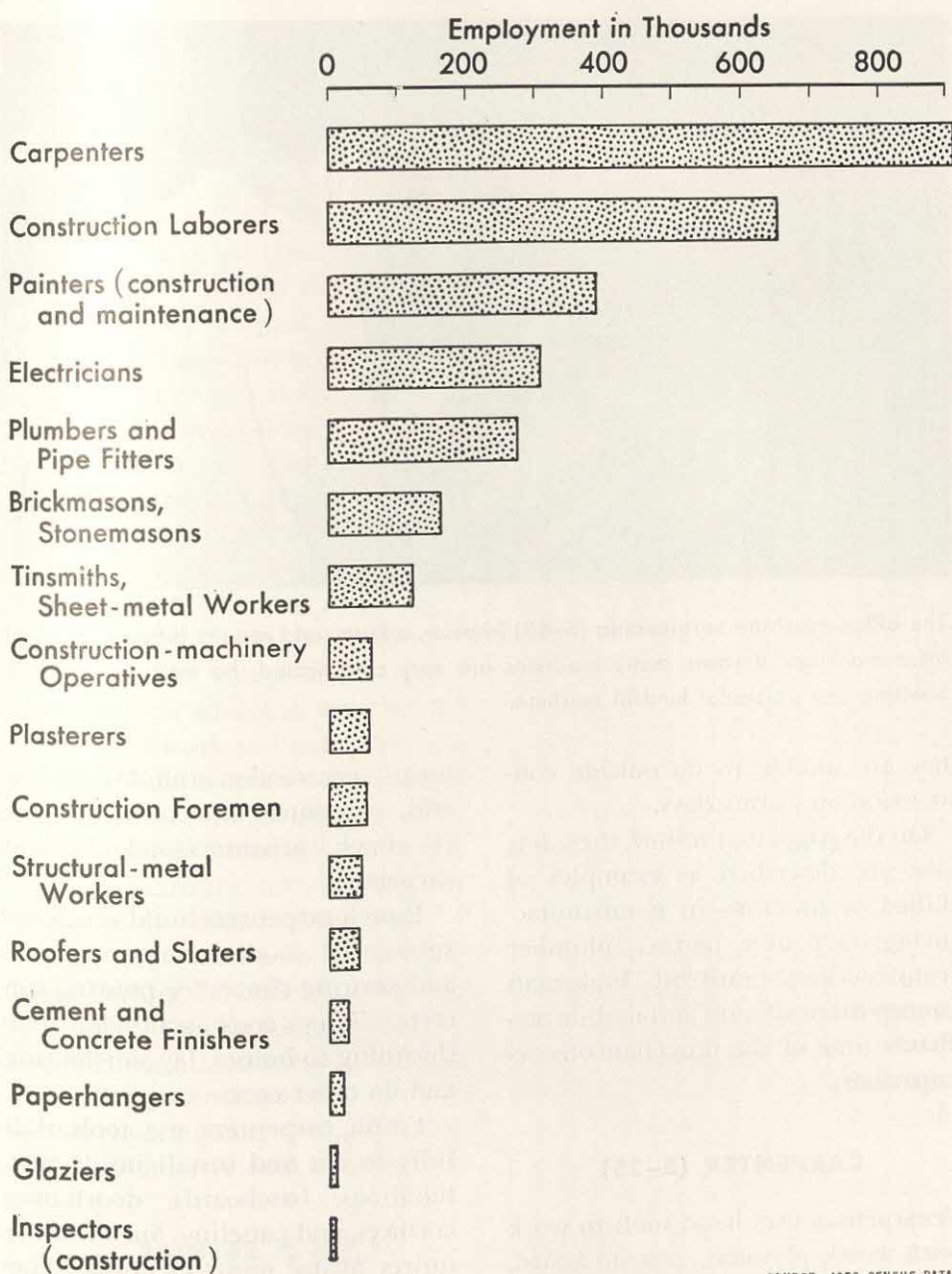
## II. Occupations in Nonmanufacturing Activities

In nonmanufacturing enterprises skilled workers are engaged in a variety of occupations: *construction* occupations—bricklayers (5-24), carpenters (5-25), painters (5-27), plumbers (5-30); *transportation* occupations—bus drivers (5-36), railroad brakemen (5-38), motormen (5-43); *communication and utility* occupations—power-station operators (5-51), linemen (5-53); *trade and service* occupations—dry cleaners (5-57), meat cutters (5-58); and *miscellaneous* occupations—stationary engineers (5-72), power-shovel operators (5-73), blasters (5-74), drillers (5-75), millwrights (5-78), automobile mechanics (5-81), repairmen (5-83), etc.

The construction trades employ more skilled workers (2,258,000) than any other nonmanufacturing industry. Two out of every five such workers are carpenters (913,000). Following in order are painters (390,000), electricians (309,000), plumbers (278,000), bricklayers (165,000), sheet-metal workers (122,000), plasterers (60,000), and paperhangers (21,000).

Most of these craftsmen work on new buildings, although many do repairing and work for themselves. When a building project is completed, the men are laid off and must find another project to work on. Workers also lose many days on account of weather conditions because

## MAJOR BUILDING TRADES OCCUPATIONS



SOURCE: 1950 CENSUS DATA

The building trades require many types of skilled workers and helpers. Carpenters form the largest single group, followed by construction laborers—the helpers who are necessary to do the heavy work (unskilled work). Painters are next in order of numbers. Many skilled workers are employed for maintenance work only.





COURTESY U. S. DEPT. OF LABOR

**The office-machine serviceman (5-83)** inspects, adjusts, and repairs different types of office machines. Because many machines are very complicated, he may specialize in servicing one particular kind of machine.

they are unable to do outside construction on stormy days.

On the pages that follow, these few jobs are described as examples of skilled occupations in nonmanufacturing: carpenter, painter, plumber (construction); railroad brakeman (transportation); and automobile mechanic (one of the miscellaneous occupations).

### **CARPENTER (5-25)**

A carpenter uses hand tools to work with wood, plywood, gypsum board, and other building materials. Nearly all construction work demands the services of a carpenter. He erects wooden building frames, installs trim, lays floors, builds concrete

forms and wooden scaffolds. In general, carpenters are of two types: (1) rough carpenters and (2) finish carpenters.

Rough carpenters build rough but substantial wooden structures, forms, and pouring chutes for pouring concrete. They erect scaffolds, apply sheathing to houses, lay sub-flooring, and do other coarse carpentry work.

Finish carpenters use tools skillfully to cut and install inside trim, moldings, baseboards, doorframes, cornices, and paneling. Such work requires fitting joints carefully. They also hang doors, lay hardwood floors, fit windows, make porches, and install cabinets.

Job prospects for carpenters appear to be good for a number of

years. Every part of the United States has a shortage of carpenters, and the housing shortage has increased the demand for these skilled workers. The work is seasonal, with the busiest time from April to November. Carpentry requires good health, ability to use the tools of the trade, and vigor to work a great deal out of doors and climb around high places. General carpenters work 40 hours a week. The average wage for union carpenters in construction is more than \$2 an hour, but few carpenters work all year round, so their annual wage cannot be figured on the basis of the amount they make an hour.

Those who choose carpentry as a career should complete at least 2 years of high school so as to be able to estimate work and materials. Public vocational schools offer training in woodwork, shopwork, and blueprint reading. Many 17- to 24-year-old boys learn the trade through apprenticeship with a contractor. It takes 4 years to become a journeyman. During the training period opportunity is given the apprentice to supplement his training with at least 144 hours of classroom work in school covering shop arithmetic, algebra, and other related subjects.

### PAINTER (5-27)

Anyone can use a paint brush and paint surfaces, but the skill of a good painter shows up in the finished paint job. A painter does all kinds of exterior and interior painting of

houses and buildings, removes old paint with a blowtorch or liquids, mixes paint, matches colors, and applies paint.

Four out of five painters work in the construction industry, but others are employed in institutions and plants for maintenance work. Construction work is seasonal, and the winter is the dull period. Painters usually travel around from job to job, either on outside or inside work, depending upon the weather.

In the next few years a large amount of painting needs to be done, especially in remodeling of old buildings, but the outlook for new workers is not favorable. The field seems to be overcrowded, and this makes competition keen. The trade is highly unionized, and a painter usually works on a 40-hour week basis. Minimum wage rates for journeymen painters may average \$2.33 an hour in large cities, but annual earnings are not high because of lay-offs.

A painter needs good health and good muscular control, as he must be able to climb around on ladders and scaffolding in high places. He also needs some artistic ability and a good color sense in order to match colors exactly.

The usual method of learning the painting trade is through 3 years of apprenticeship. As a learner, a man receives nearly one-third of the pay of a journeyman, who is a skilled painter. Trade and vocational schools in large cities offer courses in painting and decorating, includ-



ing such topics as: preparation of surfaces for painting, mixing paints, using stencils, combining colors, and taking care of tools and equipment. A good working knowledge of arithmetic is helpful in estimating time and materials, since many customers give out painting jobs to the contractor who bids lowest for the same quality of work.

### **PLUMBER (5-30)**

The plumber, also known as a pipe fitter, installs pipes for air, gas, water, steam, and waste-disposal systems, and makes repairs. His work concerns plumbing in households and piping for hot water, steam power, and refrigeration in buildings and industrial plants.

The construction industry absorbs most of the journeyman plumbers, although many work for city water departments, in shipbuilding, and in commercial establishments. Any repairing, altering, or improving of systems in buildings furnishes work for plumbers—especially those who own their own plumbing shops. The outlook for plumbers is excellent for the immediate future and will probably continue to be good. Young men will be needed to replace the large numbers of older men who reach the age of retirement and drop out of the work.

For the most part, a plumber enjoys year-round employment on construction and is well paid for his work. In large cities union plumb-

ers average \$2.65 an hour for their services.

A plumber must have a broad knowledge of the use and kinds of materials and fittings for different types of installations. A knowledge of the operation of various heating and supply systems is essential, and he must be able to use plumbers' tools skillfully. In large cities a plumber is required to have a license, and he must know state laws and city ordinances so that his work will pass inspection.

To become a journeyman plumber requires a 5-year apprenticeship. Sometimes this means waiting for an opening in a community, as plumbing shops may temporarily have all the apprentices that they are allowed under union rules. During apprenticeship a learner learns to make accurate measurements in a plumber's shop. Also he will have supplementary training in a vocational school for 144 hours. This time may be devoted to a study of mathematics, physics, mechanical drawing, piping systems, shopwork, and blueprint reading.

### **RAILROAD BRAKEMAN (5-38)**

Those who travel on the railroads are familiar with brakemen. More than 78,000 brakemen are employed by the railroads in yard, freight, and passenger service.

Yard brakemen, also known as switchmen, work on cars in a railroad yard. They make up trains by cou-

pling cars together and break up trains by uncoupling the cars. In this work they use the car brakes, couple and uncouple air hose, and throw track switches. Half of all brakemen are yard brakemen. More accidents happen to yard brakemen than to freight and passenger brakemen because they take many risks in getting on and off moving cars that are being shunted about the yard.

Two-fifths of the brakemen work on freight trains. The head brakeman rides in the locomotive and detaches the engine when necessary to take on coal or water. The "flagman," or rear brakeman, rides in the caboose and protects the end of the train. When the train stops, he walks several yards back along the track and sets signals (flags or flares) to warn approaching trains against crashing into the freight train.

The passenger brakeman, or trainman, performs similar duties on a passenger train and also assists the conductor in collecting tickets. Only one-tenth of the brakemen work on passenger trains.

The pay of yard brakemen averages more than \$12 a day; freight brakemen average less; and passenger brakemen make the least but are guaranteed a monthly wage. Brakemen pay their own living expenses on the road. Promotions are given according to seniority. After 2 to 10 years of experience, a brakeman may become a conductor, who has full charge of the train.

A new brakeman is usually re-

quired to have a high school education. He must be at least 21 and not over 30 years of age, have good eyesight and hearing, and pass a physical examination. Each railroad trains its own men for a short period, after which an examination about rules, signals, etc., is given.

### **AUTOMOBILE MECHANIC** **(5-81)**

The automobile mechanic works on passenger cars, trucks, and busses to keep them in good condition by repairing and replacing any worn-out or damaged mechanical, electrical, or body parts. The all-around mechanic examines motor vehicles, looks for trouble, finds the cause of faulty operation, and repairs any damage. Some mechanics specialize on certain car parts. For example, the body repairman repairs fenders and bodies but not engines.

Automobile mechanics make up one of the largest of the skilled occupation groups in the United States. Automobile mechanics are required for repairing cars in all parts of the country, even in rural villages. It is estimated that 500,000 mechanics work in service departments of car and truck dealers or in independent repair garages. Most automobile mechanics work in the independent general repair shops (52,000 shops) or in the service departments maintained by dealers of different car and truck manufacturers (34,000 departments). They also work in specialized repair





OFFICIAL DEPT. OF DEFENSE PHOTO

**A diver (5-89),** dressed in a diving suit that weighs about 190 pounds, works below the surface of water. The Navy's Deep Sea Diving School, located at the Naval Gun Factory, Washington, D. C., trains 40 to 50 officers and enlisted men a year. At the end of a 6-month course, the graduate becomes qualified as a Navy diver. Most Navy divers work with submarines. There is little or no opportunity for divers in civilian life.

shops and even in some of the gasoline filling stations (242,000 stations). The greatest number of mechanics work in states where the most motor vehicles are registered: California, New York, Pennsylvania, Ohio, Illinois, and Texas. These states together register more than one-third of all cars and employ more than one-third of the automobile mechanics in the entire country.

The demand for skilled mechanics is at a high level and will probably remain high. The work is not seasonal and is not unionized to any extent. Working conditions are better in large shops that have modern equipment. Small shops may fail to provide adequate heating, lighting, or ventilation for the workers. However, working conditions vary in both large and small shops.

An automobile mechanic must have good mechanical aptitude, know motor vehicles, be able to work in awkward positions in repairing cars, and be willing to handle greasy tools and parts. He must be content to work in public shops during the day; in shops that service trucks, busses, and taxis at night; or be on call for outside emergency repairs on

motor vehicles that stall on the road.

An automobile mechanic's earnings tend to be higher in the large cities, especially on the Pacific Coast and in the Great Lakes region. Trained mechanics average \$1.34 to \$2.15 an hour in large cities and usually put in a 40- to 44-hour week.

Although no standard educational requirements are necessary for those who want to be automobile mechanics, it is an advantage to have attended high school for at least 2 years. Courses in English, general science, mathematics, and physics are helpful in learning the trade knowledge needed to be a good mechanic and in keeping informed about the construction and style of many makes of cars for different years. Boys often start out to learn the trade as helpers, greasers, or washers, but more and more boys are taking courses in auto mechanics that are offered everywhere in public vocational and technical schools. Under the apprenticeship programs it takes 3 to 4 years to learn the trade. In general, it is best to gain a general knowledge of the construction and working of a motor vehicle rather than specialize at once on any part.

### III. Foremen

It has been estimated that a million and a half foremen, foreladies, supervisors, and overseers are employed in the manufacturing and nonmanufacturing industries. Before the ma-

chine age there were no such jobs. The foremen are men and women of wide experience. A skilled worker today produces only a part of a finished product, but his part must fit exactly



with other parts, and it is the foreman's duty to see that all employees in his charge perform their separate duties properly. This means that a foreman must understand the entire process from beginning to end. He is an all-around worker. Anyone aim-

ing to become a foreman should find work in production, learn it thoroughly, and seek advancement in the field. Pay of foremen is higher than that of other skilled workers, but several years of experience are required to reach this supervisory job.

### For Discussion

1. Tell why the Egyptian pyramids remain monuments to craftsmanship.
2. Who are the skilled workers, or craftsmen?
3. In manufacturing, what is meant by skilled work?
4. What do machinists do?
5. Name four machine tools that machinists use.
6. How does a person prepare to become a watchmaker?
7. What are the skilled jobs in nonmanufacturing activities?
8. What preparation is required of a carpenter?
9. What are the qualifications of a good painter?
10. What does a plumber need to know to become a skilled worker?
11. How does a man prepare for the job of (a) railroad brakeman; (b) automobile mechanic?

### What to Read

*Bricklaying*, George A. McGarvey. U.S. Office of Education Bulletin 208. U.S. Government Printing Office, Washington 25, D.C., 1941. 238 p. (40 cents)

*Cabinetmaker*, Samuel Spiegler. Personnel Services, Inc., Peapack, N.J., 1944. 6 p.

*Employment Opportunities for Diesel-engine Mechanics*. Bureau of Labor Statistics Bulletin 813. U.S. Government Printing Office, Washington 25, D.C., 1945. 10 p. (5 cents)

*Employment Opportunities in Foundry Occupations*. Bureau of Labor Statistics Bulletin 880. U.S. Government Printing Office, Washington 25, D.C., 1946. 56 p. (15 cents)

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern skilled occupations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Experiment with paint mixing. Mix colors to see how nearly you can match a color sample.
<b>BUSINESS:</b>	Visit a department store to learn how skilled machine operators keep business records and accounts.
<b>ENGLISH:</b>	Report on the biography of a famous craftsman or on a poem about a skilled workman.
<b>HEALTH:</b>	Describe the medical services that most large concerns and plants provide for their skilled workers.
<b>HOME ECONOMICS:</b>	Select the skilled occupations mentioned in this chapter that are in some way related to homemaking—that is, baker, dry cleaner, milliner, painter, weaver, etc.
<b>LANGUAGES:</b>	Why do many persons who cannot speak English work in the skilled trades?
<b>MATHEMATICS:</b>	What skilled workers find a use for algebra, geometry, and trigonometry?
<b>MUSIC:</b>	Discuss the use of musical recordings provided in some factories to help workers speed up the work.
<b>OCCUPATIONS:</b>	What apprenticeship opportunities in your community are open for new applicants who desire to become skilled workers?
<b>SCIENCE:</b>	Learn how to use a simple precision tool of the skilled trades, such as a micrometer or vernier calipers.
<b>SHOPWORK:</b>	Which of the skilled workers mentioned in this chapter might begin their preparation for the occupation in a local vocational school?
<b>SOCIAL STUDIES:</b>	Name some of the advantages that skilled workers have over other workers.



- Employment Outlook for Automobile Mechanics.* Bureau of Labor Statistics Bulletin 842. U.S. Government Printing Office, Washington 25, D.C., 1945. 18 p. (10 cents)
- Employment Outlook in the Building Trades.* Bureau of Labor Statistics Bulletin 967. U.S. Government Printing Office, Washington 25, D.C., 1949. 121 p. (50 cents)
- Employment Outlook for Business Machine Servicemen.* Bureau of Labor Statistics Bulletin 892. U.S. Government Printing Office, Washington 25, D.C., 1947. 12 p. (15 cents)
- Employment Outlook in Electric Light and Power Occupations.* Bureau of Labor Statistics Bulletin 944. U.S. Government Printing Office, Washington 25, D.C., 1948. 49 p. (30 cents)
- Employment Outlook in the Machine Shop Occupations.* Bureau of Labor Statistics Bulletin 895. U.S. Government Printing Office, Washington 25, D.C., 1947. 28 p. (20 cents)
- If You Are Considering a Career in the Mechanical Field,* Martin Herman. Rochester Institute of Technology, Rochester, N.Y., 1946. 17 p.
- Jobs in the Foundry,* Ernest L. Bowman. Science Research Associates, Chicago, 1947. 48 p.
- Jobs in the Machine Shop,* Ernest L. Bowman. Science Research Associates, Chicago, 1947. 48 p.
- Metal Trades: Machinists, Toolmakers, and Die Makers.* Michigan Unemployment Compensation Commission, Detroit, 1950. 25 p.
- Office-machine Serviceman.* Michigan Unemployment Compensation Commission, Detroit, 1948. 11 p.
- Optician.* Michigan Unemployment Compensation Commission, Detroit, 1948. 15 p.
- Pattern Makers, Wood and Metal.* Michigan Unemployment Compensation Commission, Detroit, 1950. 20 p.
- Plumbing, Steam Fitting and Pipe Fitting Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 11 p.
- Refrigeration Mechanic and Electric-Refrigerator Serviceman.* Michigan Unemployment Compensation Commission, Detroit, 1948. 9 p.
- The Skilled Labor Force,* Bureau of Apprenticeship. U.S. Government Printing Office, Washington 25, D.C., 1954. 52 p. (45 cents)
- Stationary Engineering Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1950. 24 p.
- Watch Repairing Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 18 p.
- Young Men and Machines,* Raymond F. Yates. Dodd, Mead & Company, Inc., New York, 1944. 196 p.

## CHAPTER 21 THE SEMISKILLED OCCUPATIONS—

### THE OPERATIVES

Persons who do not have enough skills in any one field of work to be a craftsman and yet have more training than unskilled laborers are classified as "semiskilled" workers in the *Dictionary of Occupational Titles*. Probably one out of every five workers in the United States is a semiskilled worker, or an operative.

"Operatives" is the U. S. Census classification for semiskilled workers, who usually operate or work around some kind of a machine. In fact, the operatives' jobs came about because of the development of machines that require persons to tend them. Some operatives, however, actually have little to do with the operation of a machine. For example, attendants at filling stations are operatives. They supply automobiles with oil, water, air, and gasoline, but the gasoline pump is the only machine that they operate, and that for only a few minutes at a time. All operatives are semiskilled workers but not all semiskilled workers are operatives,

though most of them are. The U. S. Census does not use the term "semiskilled workers," but classifies such workers as "operatives," and a list of these operatives is shown in the Appendix, on pages 577 and 578.

Semiskilled workers work with their hands (manual dexterity), operate all kinds of machines, and are continually alert while their machines are running. In most semiskilled occupations any lapse of watchfulness might cause considerable damage to the operator, to the product being made, or to the machine and equipment being used.

Machines do work for man. When properly operated, machines can turn out products with great speed. Operators of the machines learn how to coordinate their movements with those of the machines. The better their coordination, the greater the speed of production. Production over and above a certain average means more money in the worker's pay envelope. Thus, on the same machine, certain operators can produce much



## SEMISKILLED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

### I. Occupations in manufacturing and related activities

#### Food products:

- 6-02 Flour sifters (bakery)\*
- 6-04 Oyster shuckers
- 6-05 Candy-maker helpers
- 6-06 Ice-cream-maker helpers
- 6-09 Hog weighers and graders (meat packing)
- 6-10 Coffee roasters

#### Tobacco products:

- 6-12 Cigarette-making-machine operators

#### Textiles:

- 6-14 Seamless-hosiery knitters
- 6-19 Picker tenders

#### Fabricated textile products:

- 6-24 Fur-cutting-machine operators
- 6-25 Carpet sewers\*
- 6-27 Sewing-machine operators\*

#### Lumber and lumber products:

- 6-29 Log scalers\*
- 6-31 Sawmill workers
- 6-35 Chair upholsterers
- 6-36 Furniture assemblers

#### Paper and paper goods:

- 6-41 Pulp-drier-machine tenders
- 6-42 Paper cutters

#### Printing:

- 6-49 Casting-machine operators
- 6-49 Cylinder-press feeders

#### Chemicals and chemical products:

- 6-50 Paint grinders
- 6-52 Linseed-oil-press men

#### Petroleum and coal products:

- 6-55 Stillman helpers; gagers
- 6-56 Fuel-briquettes-machine operators

\* Occupation discussed in this chapter.

## **I. Occupations in manufacturing and related activities (continued)**

### **Rubber goods:**

- 6-57** Tire-builder helpers

### **Leather and leather products:**

- 6-59** Tannery grinders
- 6-61** Stitchers, machine (shoe industry)

### **Stone, clay, and glass products:**

- 6-65** Glass benders
- 6-69** Granite polishers, machine

### **Metalworking:**

- 6-73** Etchers
- 6-74** Galvanizers
- 6-77** Buffers; grinders; polishers
- 6-78** Turret-lathe operators, automatic
- 6-84** Rivet heaters (construction)

### **Electrical equipment:**

- 6-98** Chassis assemblers (radio)
- 6-99** Armature winders\*

### **Transportation equipment:**

- 7-03** Assemblyman helpers (aircraft)

### **Miscellaneous manufacturing:**

- 7-16** Painters, spray\*
- 7-18** Dyers (textiles)

## **II. Occupations in nonmanufacturing activities**

### **Extraction of minerals:**

- 7-21** Loaders, machine (mining)

### **Construction:**

- 7-24** Bricklayers, paving brick
- 7-27** Painters, rough
- 7-32** Asphalt-mixer men; plumber helpers
- 7-33** Insulation hosemen

*(continued on next page)*

\* Occupation discussed in this chapter.



**SEMISKILLED OCCUPATIONS (continued)**  
(According to the *Dictionary of Occupational Titles*)

**II. Occupations in nonmanufacturing activities (continued)**

Transportation:

- 7-35 Routemen\*
- 7-36 Taxi drivers; truck drivers; chauffeurs\*
- 7-37 Teamsters
- 7-38 Brakemen, railroad
- 7-47 Longshoremen and stevedores (supervisors)
- 7-48 Seamen apprentices

Communication and utilities:

- 7-53 Linemen, junior

Trade and service:

- 7-56 Property men (motion pictures)
- 7-57 Laundrymen; washing-machine operators\*
- 7-59 Linoleum layers
- 7-60 Automobile-service-station attendants

Public service:

- 7-61 Dog catchers

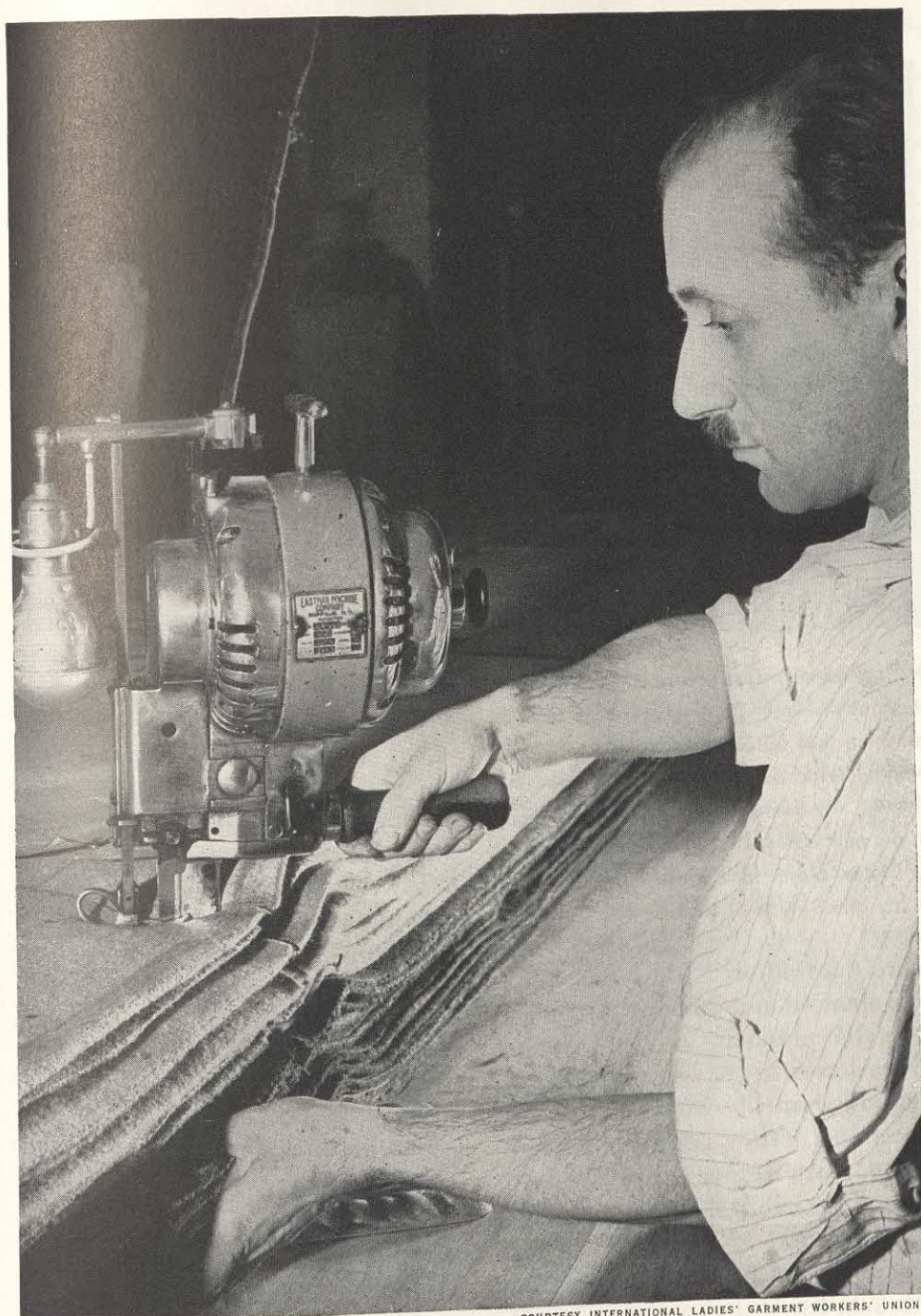
Miscellaneous occupations:

- 7-68 Can-filling-machine operators
- 7-68 Butter wrappers, machine
- 7-70 Firemen, stationary boiler
- 7-75 Jackhammer operators
- 7-81 Automobile-mechanic helpers

**III. Apprentices in all trades**

- 7-93 Carpenter apprentices
- 7-94 Machinist apprentices
- 7-95 Electrician apprentices
- 7-96 Plumber apprentices
- 7-97 Apprentices to other construction and hand trades
- 7-98 Apprentices to printing trades

\* Occupation discussed in this chapter.



COURTESY INTERNATIONAL LADIES' GARMENT WORKERS' UNION

**A machine cutter (6-27)** makes identical parts for many garments by using an electric machine which he guides along chalk lines to cut through many layers of fabric. Such workers are employed in garment factories that make suits and shirts.





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY KNELL

**Filling-machine operator (7-68).** A filling-machine operator in a dairy operates a machine that automatically fills the bottles with milk and puts on the caps. As the bottles are filled and capped, he packs them in the milk cases. Filling-machine operators are also hired to operate machines for many other kinds of products.

more than others if they have good coordination and do not work under a nervous tension.

A selected list of semiskilled occupations, from the *Dictionary of Occupational Titles*, is given on pages 334-336. An extensive list of several thousand semiskilled occupations may be found in Volume II of the *Dictionary*, on pages 167-318. From this long list of occupations a few of the better-known jobs have been selected to show samples of the work in various industries. It is of interest to

compare jobs in these industries with the skilled jobs in the same industries (see the skilled list on page 314). Also compare the list of semiskilled workers with the operatives listed by the U. S. Census on page 577 of the Appendix. It is obvious that occupations of "semiskilled workers" (*Dictionary of Occupational Titles* classification) vary somewhat from those of "operatives" (Census classification) but that for general purposes they are similar enough to be considered as the same. The selected examples of semiskilled occupations listed on pages 334-336 indicate the variety of tasks to be done in the different industries.

Semiskilled workers are the helpers and assistants in many activities. They do many hand operations that do not require any great skill or training. Many machines have been invented to replace laborers and labor work. Certain of these replaced laborers have become semiskilled workers by virtue of the fact that they now tend the machines that did away with their hand labor.

**Nature of semiskilled work.** Most semiskilled work is routine, but many men and women prefer it because they like to work on machines, and they find satisfaction in being able to see what they have done for the day. Some workers keep repeating only a few motions all day long—placing a bit of metal in a machine, pulling a lever, pressing a button, pushing a lever, or taking out the stamped product. Often the work

becomes so automatic on the part of the worker that it appears to be effortless. Such work requires little physical strength because most machines are controlled by levers operated by hand or foot. Those who enter semiskilled work must be able to stand the monotony of doing routine work all day and have the patience and coordination to learn to operate a machine fast enough to make good wages.

Semiskilled workers use very little independent judgment, except in certain narrow tasks. They usually perform only a part of a craft, or skilled occupation. However, they must use their hands quickly and accurately in routine work—especially in production—and they must be alert to avoid damage to their machines or products.

As a general rule, the semiskilled jobs depend more upon the worker's ability to pay close attention to detail and to use his hands quickly (manual dexterity) than on the knowledge gained from formal education. The limitations of semiskilled jobs prevent the learning of any broad field of work. Such jobs necessarily limit the worker to a very small area of activity. If he is adaptable, however, he can quickly learn to operate similar machines in other industries.

For example, a semiskilled worker in a bakery might be a flour sifter, a pie-filling mixer, a dough raiser, or a jelly-roll maker. Such workers assist the baker, who is a skilled worker. In a small bakery it might be possible

with further training and experience for a semiskilled worker to reach the skilled level of the trade. In a large plant, however, there may be little chance of advancement once the required semiskills are learned.

The group of semiskilled occupations also includes the work of all apprentices, or men who are in training for a skill. An apprentice is a person who is learning a skilled trade but who has not yet acquired the necessary training to become a fully trained journeyman. He is being paid while at work *learning* a skilled trade. Such apprentices, or learners, are classified as semiskilled workers as long as they are still learning their trades to become craftsmen. (See Chapter 8 for further information on apprentices.)

Certain skilled jobs, once done from start to finish by highly skilled workmen, have been broken down into several semiskilled tasks, each of which is handled by a different semiskilled worker. For example, an employer in a shirt factory no longer wants women who can make a complete shirt. The job has been broken down and divided among several power-sewing-machine operators, each of whom is a semiskilled worker. One operator works all day long just stitching together pieces of cloth designed for the collar of a shirt. Another turns the collar inside out and in one quick motion stitches the edge. Other operators have similar small tasks to do until completed shirts stack up one after another.





COURTESY WESTERN ELECTRIC CO.

**Assembler (7-00).** These particular assemblers are putting together telephone-dial governors—little mechanisms the size of a ring—which control the electrical impulses in the telephone office after the telephone dial is twirled by the person making a phone call. The “merry-go-round” table brings the parts to the assemblers. This is an example of many similar assembly-line procedures used in the making of thousands of different kinds of articles.

Speed is the keynote in such factories. A work shirt is under the sewing-machine needle only 3 minutes from start to finish, not counting the time it takes to assemble the parts ready for stitching.

In some industries the skills of the tool-and-die maker have been analyzed and the job has been broken down into several units, each of which can be handled by a semiskilled worker. In assembly-line fashion the first semiskilled worker might rough-out a piece of metal, pass it along to the next worker for further treatment, and begin roughing-out

another piece. After passing through several hands, the finished product is comparable to that made by a skilled tool-and-die maker. Thus, several such workers can produce many finished tools and dies that once could be made only by skilled workers.

**Preparation for semiskilled work.**

Those who do not like to study, who are not interested in the responsibilities that craftsmanship requires, but who do have good hand skills and a temperament for repetitive jobs make good workers in the semiskilled occupations. Most semiskilled jobs must be learned on the job, and



COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**Crucible pourers (6-91)** are foundry workers who pour molten metal from large crucibles into sand molds for making a casting.

nearly all of them can be performed with little experience or training. Employers hire untrained people and teach them how to do certain jobs in a very short time. Operatives are constantly in demand to produce goods and services, and new workers are being trained all the time.

Trade and vocational schools in large cities offer training in several of the semiskilled trades, such as the needle trades and the food trades. Preparation for many of the semiskilled trades in school, however, is not always satisfactory because the schools are unable to furnish learn-



ers with the thousands of modern, complicated, and expensive machines that industry uses.

Once on the job, semiskilled workers must make a particular effort to study during evenings and other free time if they want to get better jobs. A young person may enter a plant purposely as a semiskilled worker to "work his way up." That is, he may intend to become a supervisor, a foreman, or a manager, but he realizes that in order to deal fairly and intelligently with workers he must have practical knowledge of the working conditions and problems that the workers face.

#### **Opportunities in semiskilled work.**

Both men and women work as operatives, or semiskilled workers, but there are three times as many men as women in this group. In certain lines of semiskilled work women operatives find employment more readily than men. For example, three or four times as many women as men work in laundries. In the canning and preserving industry more women than men are employed for cleaning and preparing foodstuffs and filling the cans.

Manufacturing concerns and similar industries employ nearly half of the operatives. The next large group, with more than a million semiskilled workers, includes the chauffeurs and drivers of busses, taxis, and trucks. These operatives need only a short period of training and only a reasonable amount of skill. They should have some knowledge of routes and

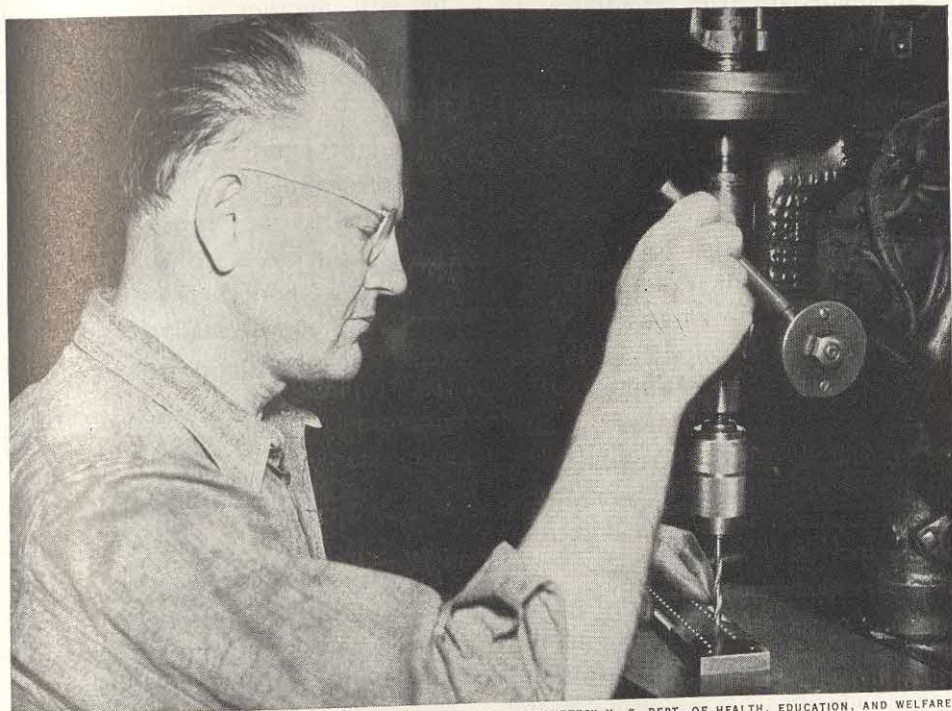
traffic, the ability to make minor repairs and keep simple records, and a certain amount of independent judgment to make decisions.

In such a broad classification as semiskilled occupations, jobs will be found to vary widely, not only in the nature of the work, but also in earnings and in levels of skill. Many of these routine jobs pay well, especially in cases of workers who are paid by the amount of work they can produce in a day.

It is unnecessary to describe at any length many of the jobs of the more than 11 million workers in the semiskilled group of occupations. As may be observed from the list of job titles, the duties and required skills of workers differ widely among the thousands of jobs in the semiskilled group. Summaries of a few selected occupations will serve as a guide to understanding semiskilled work in general.

#### **CHAUFFEUR, TAXI DRIVER, AND TRUCK DRIVER (7-36)**

The largest group of operatives in nonmanufacturing activities are the drivers of motor vehicles. Nearly a million and a half workers are employed as chauffeurs and drivers of taxis and trucks. Most high school boys and girls want to learn to drive the family car at the earliest legal age. Many who learn to handle a car properly will enter the motor transportation industry as taxi, bus, or truck drivers or as chauffeurs.



COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**Single-spindle-drill-press operator (6-78).** Drilling holes in a piece of metal, counter-sinking, and reaming of metal objects are involved in the work of this operator. Little training is required for this semiskilled work.

Both chauffeurs and taxi drivers obtain jobs readily. Jobs are plentiful and workers are transient. Chauffeurs work for private individuals and families. Taxi drivers operate cabs and charge their passengers fares based on the distance traveled. Deliverymen, including milkmen and laundrymen, who call at homes, drive light delivery trucks and sometimes, in addition, are salesmen for goods and services. Employers investigate the honesty of the deliverymen who make collections and handle money on their routes. Bus drivers are carefully selected because they not only must be safe drivers,

but they must also deal with people, meet time schedules, and handle baggage. Truck drivers in the trucking industry must be equally safe drivers, strong, reliable, and steady. (See pages 535-536.)

### LAUNDRY OPERATOR (7-57)

Laundry work is a service. To the customer, a "laundryman" is a man who collects the soiled clothes and returns them fresh and clean. But between the time a laundryman picks up the clothes and returns them, many persons, each with a special job, works on the clothes.



In small laundries, a laundry operator may do several of the tasks. In a larger laundry, the tasks are broken down so that each of the tasks is done by a different person—some of whom are semiskilled workers and some unskilled workers. A man (*routeman*, 7-35) picks up the bag of soiled clothes and delivers it to the laundry, where a young man (*bundle boy*, 9-57) places the bundle on a conveyor belt to go to the next person (*breaker*, 9-57), who opens the bundle. The clothes are then sent to another person (*bundle weigher*, 9-57), who weighs the clothes and records the weight on a laundry ticket. Another worker (*marker*, 7-57) puts a laundry mark on each piece with a machine. The next person (*classifier*, 7-57), who has a knowledge of the washability of fabric and the fastness of color, separates the pieces for different washes. Another worker (*machine washer*, 7-57) prepares the water, suds, and bleaches at the right temperature and places the clothes in washing tanks. The delicate pieces of laundry might be washed separately by hand (*washer, hand*, 7-57).

After the clothes in the machine have been washed, a washing-machine operator (*extractor operator*, 9-57) whirls the water out of the clothes and turns them over to another worker (*tumbler operator*, 9-57) who dries the damp clothes with currents of warm air. The next worker (*shaker*, 9-57) shakes out the clothes, ready for ironing. The clothes are sent through the ironer

by still another worker (*flatwork feeder*, 9-57), and folded by still another (*flatwork folder*, 9-57). Part or all of the delicate pieces may be ironed by hand by another worker (*presser, hand*, 7-57).

A final worker (*assembler*, 9-57) inspects the pieces, collects those that belong together, checks the list, and wraps the bundle ready for delivery. The routeman then returns the bundle to the customer.

Note that all of these workers come under *laundry operator*, 7-57 (semiskilled) or *laundry worker*, 9-57 (unskilled), except the routeman, 7-35, who is a semiskilled worker under "transportation."

In small laundries many of the jobs are combined and done by one worker. In larger laundries the work may be broken down into even more jobs.

### POWER-SEWING-MACHINE OPERATOR (6-27)

A power sewing machine is similar to the home sewing machine, except that it is heavier, runs at a very high speed, and may have several needles. The power-sewing-machine operator in any industry is a semiskilled operative, usually a woman. Using a power machine, she sews fabrics to make garments, upholstery, awnings, bags, and other textile products. She usually performs only one small task in a factory that produces finished articles in quantity.

An operator is known by the

type of machine she uses. For example, a *blind-stitch-machine operator* stitches hems of garments on a machine equipped with a curved needle, which makes stitches that are not visible on the right side of the garment. The *hemmer* folds under and stitches the edges of material to produce a finished edge, or hem. Her machine is equipped with a device that folds the material to be sewn automatically. The *double-needle-sewing-machine operator* sews on a machine that makes two parallel rows of stitching at the same time. The *multiple-needle-sewing-machine operator* sews parallel rows of stitches, using a special machine equipped with from 5 to 30 needles. These are all *power-sewing-machine operators* (6-27).

The work of the sewing-machine operator is often seasonal and promotion is slow, but pay increases with the skill of the worker. A good operator must have good coordination and be quick with her eyes and hands.

Training for this work may be had at trade schools in large cities where the garment trades flourish. For example, in New York City 10 schools give courses in power-machine operating. Men and women employed during the day in related occupations may attend in the evening and work toward a diploma in 3 years. Usually there are no educational requirements. The work can be learned in day school in 2 to 6 weeks, depending on ability.

### FLOUR SIFTER (6-02)

A flour sifter works in the bakery-products industry. He sifts flour by machine to clean it and aerate it. He dumps sacks of flour into the hopper, and trucks the sifted flour to a mixing machine or to a storage room. He keeps a record of the flour sifted, and he may blend (mix) flour also.

### CARPET SEWER (6-25)

A carpet sewer sews sections of carpeting together and finishes the edges with a binding, which he sews on by hand.

### LOG SCALER (6-29)

A log scaler uses a scaling stick to measure the length and diameter of logs, in order to estimate the volume of timber in each log. Thus he determines the volume of timber taken from a timber lot.

### ARMATURE WINDER (6-99)

An armature is the moving part of an electric motor—the part that goes round and round to make power to turn wheels. An armature winder winds coils of wire into slots of the armature. This work is done in plants that manufacture small motors and generators. Many such plants are located in Schenectady, New York; Pittsburgh, Pennsylvania; and St. Louis, Missouri.





COURTESY U. S. FOREST SERVICE

**Log scaler (6-29).** One of the duties of a log scaler is to estimate the number of board feet that can be sawed from logs. He finds the length and diameter of a log with a scaling stick, writes down the measurements, and then marks the measurements on the end of the log with a crayon.

### **SPRAY PAINTER (7-16)**

Instead of using a paint brush for painting, the spray painter uses a

spray gun filled with paint, lacquer, or stain. With this machine he paints many kinds of manufactured goods with a fine spray of color.

### **For Discussion**

1. What is an "operative"?
2. How does semiskilled work differ from skilled work?

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern semiskilled occupations.

### SUBJECT AREA

### OCCUPATIONAL UNITS

#### ART:

Make a paper box by cutting out a paper pattern. In industry this work is done by machine operators who are semiskilled workers. Compare time and finished product.

#### BUSINESS:

What type of semiskilled workers would profit by business courses and advance in their work?

#### ENGLISH:

What kind of English course is most suitable for a person who expects to be employed as a semiskilled worker?

#### HEALTH:

Mention two or three industries that employ semiskilled workers and pride themselves on low accident rates and good health of workers generally.

#### HOME ECONOMICS:

Compare the homemaker's sewing machine with the power sewing machine used by a semiskilled sewing-machine operator in a factory.

#### LANGUAGES:

Under what conditions is a foreign language useful to a semiskilled worker?

#### MATHEMATICS:

Learn to measure by one of the standard measuring devices that a semiskilled worker uses—meter stick, log scaler, printer's measure, etc.

#### MUSIC:

If you were a semiskilled factory worker, what type of recorded music would you prefer to hear while you were at work?

#### OCCUPATIONS:

List the semiskilled jobs that you know about in your community. (Consult the *Dictionary of Occupational Titles*, Volume II, for a complete list.)

#### SCIENCE:

In the laboratory, make silver polish that a silver polisher (semiskilled) would be able to use.

#### SHOPWORK:

What semiskilled trades are taught in local school shops?

#### SOCIAL STUDIES:

Discuss how the semiskilled jobs level wages and equalize opportunities.



3. Name six semiskilled workers in the production of food products.
4. Describe some of the duties of semiskilled workers.
5. How have machines increased the opportunities for semiskilled workers?
6. Tell about some of the methods for preparing for semiskilled work.
7. Discuss the opportunities for employment in the semiskilled occupations.
8. What is the largest group of operatives in nonmanufacturing activities?
9. Name six laundry operators and tell what they do.
10. Describe the training that a power-sewing-machine operator should have.

### What to Read

- Automobile and Truck Mechanics.* Michigan Unemployment Compensation Commission, Detroit, 1949. 30 p.
- Bookbinding Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 22 p.
- Career Opportunities*, Mark Morris, editor. Progress Press, Washington, D.C., 1946. 354 p.
- Electrical Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1949. 24 p.
- Jobs Ahead*, R. M. Cleveland and F. B. Latham. Appleton-Century-Crofts, Inc., New York, 1946. 259 p.
- Needle Trades—Sewing Machine Operators.* Michigan Unemployment Compensation Commission, Detroit, 1949. 17 p.
- Occupational Guides. (Ask for current list.) Michigan Unemployment Compensation Commission, Detroit.
- Occupational Guides. (Ask for current list.) U.S. Employment Service. U.S. Government Printing Office, Washington 25, D. C. (5 cents each)
- Outdoor Jobs for Men.* Vocational Guidance Research. Vanguard Press, New York, 1947. 273 p.
- Stationary Engineering Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1950. 24 p.

## CHAPTER 22 THE UNSKILLED OCCUPATIONS

**Unskilled** occupations are the easiest for young people to get into, yet they offer the least security for people as they grow older. More than 3 million laborers and an additional 2½ million farm laborers are doing unskilled work. In other words, about 1 out of every 10 American workers is in some form of unskilled work.

**Nature of labor work.** Laborers, or unskilled workers, in any industry perform tasks that can be learned in a few hours or in a few days at most. Workers may be changed about from one job to another by the employer without being consulted. This is possible because no experience is necessary for most unskilled jobs, and the worker generally would just as soon be doing one job as another. A laborer's duties in some fields of work may involve heavy, rough, outdoor work, or, in other fields, they may involve inside work in a clean, warm office. In either case, the laborer's tasks are of an elementary, routine nature, done under the direction of a trained worker.

For example, the skilled bakers in a large bakery must have several helpers to prepare raw materials and

clean up the working areas. This frees the bakers to exercise their skills in making finished products for sale. Such jobs require no more knowledge than a mother expects of a child who helps her prepare food in the home kitchen. Any teen-ager can do most of the tasks required of these helpers, who are employed at such jobs as apple slicer, bread-dough-mixer helper, doughnut sugarer, pan liner, pan greaser, or pie filler.

The thousands of unskilled jobs are classified and listed in the *Dictionary of Occupational Titles*, Volume II, pages 319-423. The list of unskilled occupations on pages 350-351 includes examples of the work in different industrial groups, together with code numbers.

These few selected occupational titles of unskilled workers are more or less familiar to the public. The majority of occupational titles in the group of unskilled workers, however, refer to some machine or part of a machine that needs helpers to feed it. Such machines are not generally known outside of the industry that uses them. By referring back to the lists of skilled workers (Chapter 20)



## UNSKILLED OCCUPATIONS

(According to the *Dictionary of Occupational Titles*)

### I. Occupations in manufacturing and related activities

#### Food products:

**8-02** Pan cleaners (bakery)\*

**8-05** Candy packers\*

**8-10** Coffee-container fillers

#### Textiles:

**8-19** Warp boys (textile mill)\*

#### Fabricated textile products:

**8-27** Basting pullers

#### Lumber and lumber products:

**8-34** Woodworking-machine feeders\*

#### Paper and paper goods:

**8-41** Rag cutters (paper mill)\*

#### Printing:

**8-49** Newspaper bundlers\*

#### Chemicals and chemical products:

**8-51** Mold parters (plastics)

#### Rubber goods:

**8-57** Inner-tube splicers\*

#### Stone, clay, and glass products:

**8-66** Kiln workers

#### Metalworking:

**8-72** Clock assemblers

**8-78** Machinist helpers\*

**8-82** Casting cleaners (foundry)

#### Electrical equipment:

**8-98** Tube testers\*

#### Miscellaneous manufacturing:

**9-16** Painters, spray

**9-19** Gluers

\* Occupation discussed in this chapter.

## II. Occupations in nonmanufacturing activities

### Extraction of minerals:

**9-20** Roustabouts (petroleum)\*

### Construction:

**9-32** Ditch diggers\*

**9-32** Hod carriers\*

### Transportation:

**9-35** Routeman helpers\*

**9-47** Longshoremen and stevedores\*

### Communication and utilities:

**9-54** Street-light changers and renewers

### Trade and service:

**9-56** Swimming-pool attendants\*

**9-57** Bundle boys\*

**9-59** Floor waxers\*

### Public service:

**9-61** Snow removers

### Miscellaneous occupations:

**9-70** Ashmen\*

**9-71** Oilers\*

**9-85** Cleaners\*

**9-88** Car loaders\*

**9-88** Stock boys\*

**9-89** Grave diggers\*

**9-89** Shovelmen, hand

\* Occupation discussed in this chapter.

and semiskilled workers (Chapter 21), arranged by the same industry groups, one can understand better the nature of the unskilled jobs described in this chapter. The occupations briefly described below give a general idea of what unskilled work is like and how very necessary un-

skilled workers are to all industries.

*A pan cleaner (8-02)* cleans and scrapes pans in a bakery and wipes them clean with a cloth. He may wash them with soap and water before returning them to racks.

*A candy packer (8-05)* packs pieces of candy, placed in fancy paper cups,





HAROLD M. LAMBERT FROM FREDERIC LEWIS

**Laborer, highway construction (9-32).** Unskilled workers on road construction work in a "gang" under a "boss" or foreman, carrying out tasks concerned with the laying of pavements for highways.

in boxes. Often in large plants conveyors bring the candy or the boxes in an assembly-line fashion to the packer.

A *warp boy* (8-19) in a textile mill keeps machines supplied with warp yarn. He also takes empty bobbins to the cone-winding department to be wound with yarn.

A *woodworking-machine feeder* (8-34) in a planing mill lays wood stock on conveyors that feed into the machine.

A *rag cutter* (8-41) in a paper mill feeds a machine that cuts rags into pieces for making pulp for rag paper.

A *newspaper bundler* (8-49) in a newspaper publishing plant wraps bundles of newspapers in heavy

brown paper for news dealers. He also wraps single papers for mailing.

An *inner-tube splicer* (8-57) in a tire factory cements the ends of rubber tubes together to make doughnut-shaped inner tubes for automobiles.

A *machinist helper* (8-78) in a machine shop is a machinist's handyman.

A *tube tester* (8-98) in a radio manufacturing plant tests radio tubes on a meter and rejects the faulty ones.

A *roustabout* (9-20) works with a crew of men in an oil field, doing any kind of heavy, rough work around petroleum wells.

A *ditch digger* (9-32) in construc-



COURTESY STANDARD OIL CO. (N. J.)

**Roustabouts (9-20)** are laborers, unskilled workers, who perform rough construction work in oil fields. Here they are pushing a frame member into the eyehold of the support, using a crowbar to get it into place.

tion work digs trenches with a pick and a shovel.

A *hod carrier* (9-32) in construction work carries bricks, concrete, mortar, and plaster in a hod to bricklayers, masons, and plasterers. His work is hazardous because he climbs about on ladders and scaffolding.

A *routeman helper* (9-35) loads a light truck and helps make deliveries of goods to customers' homes.

A *longshoreman* (9-47), or *stevedore*, loads and unloads heavy cargoes in ships docked at wharves. Those who live near water fronts have seen these men moving bales, boxes, and livestock to and from all kinds and sizes of sailing vessels. Longshoremen and stevedores are laborers who move freight with hand trucks from place to place on a wharf. They also stack goods in the



ship, taking care to pile them so they will not be damaged during the voyage, or pile freight on the wharf, ready for removal. In their work they use a winch (hoist) and sling (heavy rope) as much as possible in unloading a ship, but often it is necessary for them to carry the cargo ashore on their backs. Accidents are frequent.

The longshoremen and stevedores work on water fronts. Longshoremen are strong men and of many nationalities. Some do not speak English. They are usually formed into "gangs" under the direction of a gang foreman. Weather does not stop their work because the ships must leave on schedule, rain or shine. Longshoremen are well paid because of strong union organization, but the work is hard and there is little chance for advancement.

*A swimming-pool attendant (9-56)* sweeps, scrubs, and polishes floors and walls of a swimming pool and the locker rooms.

*A bundle boy (9-57)* in a laundry distributes bundles of soiled clothing on a hand truck to different departments of the laundry.

*A floor waxer (9-59)* cleans, waxes, and polishes floors by hand or by machine.

*An ashman (9-70)* removes ashes from a boiler or furnace.

*An oiler (9-71)* lubricates the moving parts of machines in factories or on ships.

*A cleaner (9-85)* cleans the inside and outside of busses, streetcars, and other public vehicles.

*A car loader (9-88)* loads and unloads cars and trucks with heavy materials and freight.

*A stock boy (9-88)* in a department store or factory keeps departments supplied with goods from the supply room or stockroom.

*A grave digger (9-89)* in a cemetery digs graves with a pick and a shovel.

*A government laborer* may have varied duties, depending upon the agency or bureau in which he is employed. The Government, in all of its units, employs workers who have no particular trade or craft. Although these men and women are employed as unskilled laborers, many have a surprising amount of knowledge and judgment about the work that they are required to do. Most of the laborers who have permanent jobs in the Federal Government are required to take Civil Service examinations. But a great many laborers are hired by the hour when needed, and these workers are not subject to Civil Service requirements. One announcement for laborers in the Federal Government service outlined such qualifications as these to be necessary:

Six months of experience in manual work involving strength and physical effort; age limits, 18 to 62 years; no written test required; applicants' qualifications will be judged from a review of sworn statements as to their experience and on evidence secured by the Civil Service Commission. Application



COURTESY NEW YORK CENTRAL SYSTEM

**Longshoremen (9-47)**, or **stevedores**, who are unskilled workers, on water fronts load and unload ships' cargoes. Here they are moving bales from the ship to the freight cars at one side of the loading pier. Longshoremen are usually well paid because their work is hard and not steady and also because they have strong unions.



forms may be obtained from any first- or second-class post office.

In the Post Office Department, where laborers are employed to pile and truck bags of mail, applicants must be between 18 and 45 years of age; take a written examination to measure judgment, ability to read and understand directions; and pass a strength test—shouldering a 125-pound mail sack. Such agencies as the Biological Survey, U. S. Forest Service, and National Park Service provide seasonal outdoor work. Young men who are still in school sometimes find desirable summer employment as laborers with government departments. Good physical condition may be the only requirement for such part-time work.

Laborers in the Federal Government are designated as (1) "classified" or (2) "ungraded Wage Board employees." Classified workers are those selected through Civil Service examinations who have permanent jobs beginning at \$1810 a year. Ungraded Wage Board employees are those employed only when needed and are paid by the hour for time actually worked. Employing federal agencies have wage boards which determine the prevailing rate of pay according to each locality.

**The need for unskilled workers.** Someone has to do the heavy, routine, unpleasant tasks in or out of industry in order to maintain our standard of living. Someone has to sweep, scrub, wash, polish, carry, and

perform heavy muscular work that keeps business and industry alive. Someone has to handle a pick and a shovel to carry out the projects of the engineer. Someone has to carry bricks and mortar in a hod to high places to help the bricklayers in constructing buildings.

The need for physical laborers is obvious when we stop to watch a construction gang at work as they shovel the earth, carry bags of cement, use picks and shovels, and do other labor work under the direction of a foreman or superintendent. The foreman uses no tools, but he is so familiar with the work that he is able to supervise the work of the laborers and tell the men what to do. Without laborers, industry would be unable to supply the average American with the kind of food, clothing, and shelter that he is accustomed to.

Many types of unskilled jobs require men who have physical strength and endurance—especially in their arms, back, and legs. But some unskilled jobs require workers—women as well as men—to be quick-motioned with their hands or feet. Workers must accept orders willingly and be able to follow directions exactly. There are unskilled jobs for young and old. Age is not a factor. Schooling or experience is seldom required, and many foreign-born workers, even without a knowledge of English, can do satisfactory work on many jobs.

**Trends in labor work.** The unskilled labor group has been declining in

recent years. The proportion of laborers to population is now lower than ever before, yet production is higher. The semiskilled group of workers, however, has been growing and will undoubtedly continue to grow. This indicates that more people are learning to do some special job, however small. It also means that machines are taking much of the physical toil out of labor.

Much of the work of unskilled laborers is being reduced to simple processes by the use of machines. As new machines are invented to do such work, many laborers are replaced and must find new jobs or become semiskilled workers by learning how to operate the machines. For example, in the steel industry, laborers were once employed to wheel scrap iron to furnaces. This work was laborious for the many strong men that were required to move the heavy scrap metal from one place to another. Then a machine was invented to do this work which could be operated by one man but still do the work of the many laborers who were previously needed. The machine is a crane (derrick), equipped with a huge electromagnet. The electromagnet attracts iron and steel only when an electric current passes through it. The crane drops the magnet on a heap of scrap iron, the operator moves a switch, and a great load of iron clings to the magnet. The crane then lifts the magnet with its load and swings it around to be dumped. When the operator releases the



**A cement-finisher helper (9-32)** is an unskilled worker who keeps the **cement finisher (5-26)** supplied with materials and tools. This might be a first job for a boy. In order to become a skilled worker (cement finisher), he would have to learn the trade as an apprentice for 3 to 4 years.



switch, the magnet loses its attraction for iron, and the whole load of scrap iron drops into place. As a result of this invention, hundreds of laborers lost their jobs, but the steel industry got rid of one back-breaking operation for its workers.

Similarly, huge road machines are now used instead of pick-and-shovel men to construct highways. Such machines have not only lowered the cost of building roads but make it possible to build roads much better and faster than ever before. But again, these machines have reduced the number of laborers needed for road work. On the other hand, because more roads are being built everywhere, there are more opportunities for the road workers that are necessary and their work is much less strenuous.

The use of machines and labor-saving devices has had its greatest effect on employment in the field of unskilled labor. Notice the changes brought about by the universal use of the electric refrigerator, for instance. It is no longer profitable for men to work in winter in freezing temperatures cutting ice on the lakes, hauling it to ice houses and packing it in sawdust, loading it in freight cars that take it to cities, and delivering it on men's backs to homes. The electric refrigerator has done away with all of this hard labor. The icemen have been obliged to go into other businesses or to work in plants that manufacture ice.

Some of yesterday's laborers have

become today's operators of labor-saving machines. A laborer who is replaced by a machine has a good knowledge of what the machine is capable of doing. He then should make a good operator of that machine in many cases.

**Labor jobs as entry occupations.** Entry occupations are jobs sought by those who lack experience or training necessary for more advanced work. Young people sometimes complain that they cannot get first jobs because they have no experience. They ask, "How can I get experience, if only experienced persons are hired?" Unskilled jobs may be one answer and may prove to be the opening wedge needed to gain experience.

Many high school graduates will take their first jobs as laborers, or unskilled workers, unloading trucks, sweeping out stores, or dusting stock. College men and women often work part time at unskilled jobs to earn college expenses. Many of them work as laborers on highway construction or as machinists' helpers, factory hands, automobile washers, window washers, cannery workers, cemetery workers, porters, or caretakers.

In spite of the fact that some unskilled work cannot be distinguished from white-collar jobs, some persons look down on unskilled labor as menial toil. However, during World War II men and women in all walks of life did not scorn unskilled work but found labor jobs as a patriotic



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

**Stackers (9-88)** in warehouses of industrial plants take cases off moving belts as they come packed, and stack them ready for shipment. Such jobs are classified as unskilled work.

duty. Those with good educational background and ambition who begin with work as unskilled laborers should advance in a short time to more interesting employment in line with their training. Trained persons who enter unskilled occupations generally have a plan in mind to gain experience for better jobs ahead.

Your first job may be common labor, quite unrelated to any work you

plan to do in the future. Experience comes through work-for-pay jobs, either regular or part-time. Your employer will observe your work while you gain your first experience. He will know whether you are a good worker or a loafer and whether you are a profitable investment for him or a dead loss to his business. He has many ways of finding out your qualifications. His recommendations may



have a considerable influence on your future.

There is no stigma to honest labor. There is a stigma, however, if a person continues to work at unskilled jobs *below his level of ability*.

**Unskilled work as a career.** Some workers continue through life as laborers, without learning any special skills. Some of these persons have had no opportunity to learn a trade or to learn to do skilled or semiskilled work. Some laborers lack the mental ability to do anything else, are unable to read and write, or have too little schooling to enter other work. There are those who lack ambition or fear responsibility. Many who dropped out of school when they were young failed to make the most of their opportunities to learn. Yet the 5 million laborers in this country, two-thirds of whom are over 25 years of age, are generally happy, well fed, and content in their unskilled jobs.

Unskilled workers are well paid, considering the tasks that they do, and better paid of late years than ever before. In fact, some laborers receive higher wages than many clerical workers or certain skilled workers, but they are usually paid on an hourly basis of time put in. Their wages vary with different sections of the country, the industry, the job, the size of the community, and the employer. The minimum wage for unskilled work is 75 cents an hour, but many such workers make \$1 an hour or more.

In any industry, opportunities for advancement of the unskilled worker are slight, but the worker gains experience that is valuable to some employer. The laborer's work does not give him a chance to learn a trade or become trained. He is merely putting in time, helping other workers who are skilled. He lacks security because he can be replaced overnight by any one of thousands of other unskilled workers. If he is ambitious and can find time to learn new skills in evening school or by home-study courses, he may become more valuable to his employer and be transferred to other work. Or, he may find a new and better job elsewhere.

Young people on first jobs in any industry must be aware of these conditions and strive for the highest type of work that they can do well. Once firmly established in an unskilled occupation, a worker may continue in it because family obligations do not allow him time for additional training or because he is too tired after a day's work to study at night.

Young people in high school will be more interested in the unskilled labor occupations as stepping stones to other work, but some will enter labor work for life. Almost any job starts out with elementary routine work before much progress is made. Those who choose unskilled occupations should consider carefully the following summarized statements:

1. Much of the world's work depends upon common labor.
2. Honest labor is a good way to



COURTESY NORTHERN PACIFIC RAILWAY

**Hand shovelmens (9-89)**, or railroad laborers, are grading a railroad right-of-way with heavy ballast. They also help with other heavy construction work. Many are part-time workers, the size of the project determining the need for full-time work, or they may be transferred from job to job. These men are unskilled workers.

- gain experience in the occupational world.
3. Little or no training or experience is required to get unskilled jobs.
4. The State Employment Service places many people as laborers.
5. Employment as an unskilled worker is fairly easy to find.
6. Some unskilled jobs provide excellent contacts for new jobs.
7. Some laborers are better paid than workers in other occupations requiring more training or education.
8. Unskilled work is usually paid for by the hour.
9. Trends in the labor market are affecting opportunities for employment of the unskilled.
10. Great numbers of laborers are becoming semiskilled workers.
11. Unskilled work is often seasonal.
12. Unskilled work offers experience but no future.





WIDE WORLD PHOTO

**Truck-driver helpers (9-49)** assist the truck driver and share with him the job of loading and unloading the truck, shifting packages about, and sometimes driving the truck to relieve the **truck driver (7-36)**. This may be a first job for boys with good muscles.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern unskilled work.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Examine prints of famous pictures of labor and laborers.
<b>BUSINESS:</b>	Discuss the advisability of a young person's taking an unskilled job as preparation for business management.
<b>ENGLISH:</b>	Write a sketch about a person who started as a laborer and worked his way to the top.
<b>HEALTH:</b>	For rough, heavy work, discuss the importance of a strong back and of a knowledge of how to use muscles properly in lifting.
<b>HOME ECONOMICS:</b>	Compare the nutritional needs of an unskilled laborer, who does heavy, outside, physical work, with those of an office worker, who does light, indoor work all day.
<b>LANGUAGES:</b>	Why do so many members of laboring crews who fail to learn English manage to get along by using their native language?
<b>MATHEMATICS:</b>	Make a graph showing the number of unskilled laborers over a period of the last 50 or 100 years, and explain why the number is decreasing.
<b>MUSIC:</b>	Why are laborers from other countries more familiar with grand opera melodies than American-born laborers?
<b>OCCUPATIONS:</b>	What are the trends in wages in your community for unskilled workers? (Ask your nearest State Employment Office.)
<b>SCIENCE:</b>	Discuss soap, soapless fluids, and detergents that unskilled workers use in cleaning.
<b>SHOPWORK:</b>	What evening classes in vocational schools would benefit unskilled workers?
<b>SOCIAL STUDIES:</b>	Tell how labor unions benefit unskilled workers, such as the longshoremen.



**For Discussion**

1. What is meant by unskilled work?
2. Who are the unskilled workers, or laborers?
3. Why are so many persons employed as laborers?
4. Mention some of the trends in unskilled work.
5. Explain the need for unskilled workers.
6. Why should young people consider unskilled occupations as entry occupations?
7. What type of person should consider unskilled work as a career?
8. What do government laborers do?
9. What do longshoremen do, and why are they well paid?
10. Tell how machines have taken many opportunities for employment away from laborers.

**What to Read**

*Job Horizons*, Lloyd G. Reynolds and Joseph Shister. Harper & Brothers, New York, 1949. 102 p.

*The Unskilled Worker*, Louis Eisman. Science Research Associates, Chicago, 1940. 48 p.

## PART III

### OCCUPATIONS BY INDUSTRIES

- 23. *Labor Relations and Industry*
- 24. *Government Work—A Form of Industry*
- 25. *Industries—An Overview*
- 26. *The Automobile Industry*
- 27. *The Textile Industry*
- 28. *Food-Preparation Industries*
- 29. *The Iron and Steel Industry*
- 30. *The Printing Industry*
- 31. *The Mining Industry*
- 32. *The Petroleum Industry*
- 33. *The Transportation Industries*
- 34. *The Communications Industry*



## CHAPTER 23 LABOR RELATIONS AND INDUSTRY

The Constitution of the United States gives the people of our country the democratic right to govern themselves. Consequently, we believe in an economic system that is based upon *private* ownership and *individual* initiative. Where labor is involved in this system, a three-cornered relationship exists—the worker, the employer, and a free society. When labor disputes arise, each of these three groups must be satisfied in any decisions that are made or any laws that are passed.

Today's headlines are full of labor troubles and labor laws to adjust such troubles. In order to adjust labor troubles, we must have good leaders, representing both labor and employer, who can settle industrial disputes around a conference table, use fact-finding as a means of understanding labor problems, and propose constructive measures for the good of all. Let us examine some of the conditions of industry that exist today and how they affect labor relations.

**The machine age.** In the past, employers seldom encouraged their workers to organize into unions. Em-

ployers believed that unions disturbed labor relations and interfered with production. They preferred to deal with each worker individually and reward him according to his merits. However, industrial plants have increased in size to such an extent that it is now impossible for employers to deal personally with individual workers. Thus, unions became necessary to handle the workers' problems.

When the country grew from an agricultural to an industrial nation, high-powered machines and new methods of production were introduced that displaced many workers and caused "technological unemployment." Workers lost their jobs, not because of any lack of skill, but because machines were more efficient than hand work. The problems of the workers thus multiplied. For example, in the manufacture of men's clothing, workers lost their jobs when one power machine and two operators could do the work of 200 persons. Take the manufacture of electric light bulbs, for instance: In 1918, one man could make 40 bulbs per day. The following year a ma-



EWING GALLOWAY

Labor problems arise chiefly out of matters about wages and working conditions. Labor organizations were formed so that workers could, by means of collective bargaining, improve the conditions under which they work and the wages they receive.

chine capable of making 73,000 bulbs every 24 hours was introduced. Every machine in use displaced 992 men.

Nevertheless, we have all benefited by machines. Great quantities of machine-made goods are available to all at lowered cost because of mass production. Since each unit of a machine performs only one hand operation, the work of one craftsman in industry may be divided into several new processes and methods for ma-

chine production. Each machine requires an operator who is responsible for the quality and quantity of the output. This technological change, therefore, has created many new industrial jobs which are neither old skills nor new crafts, but entirely new occupations in the processing of raw materials by the operation of complicated machines. Because the number of workers on these new jobs has increased, such jobs have been union-



ized for the protection of the new workers. While labor disputes have grown in number and complexity, organized labor has helped industry to work out many of the problems that have arisen as a result of the new industrial conditions.

**Wages.** Most labor problems arise out of the wage system. The great mass of our population must depend upon wages for their livelihood throughout their whole lifetime. A wage earner by himself cannot control his working hours or the amount of work that is expected of him in the same manner that a farmer or a professional man is able to do. From the workers' standpoint, "labor problems" involve the wages they receive, the amount of work they do, and the conditions under which they work. Until recent years low and uncertain wages have caused much insecurity. The wage system, therefore, has caused difficult labor problems and has been largely responsible for bringing about the organizing of workers into labor unions.

Wage earners have organized into labor unions for the purpose of dealing with employers to establish terms and conditions of employment for their members. A single craftsman has little bargaining power with an employer when the employer happens to be a big corporation. Workers, therefore, believe that "in union there is strength" and have organized to be better able to improve their working conditions by bargaining collectively.

## LABOR ORGANIZATION

Labor organizations are voluntary associations of wage earners who have united for the purpose of advancing their economic and social well-being. A labor union that has members in Canada as well as in the United States is known as an "international union." Approximately 1 out of every 4 in the nation's labor force (all workers) belongs to a labor organization. The Bureau of Labor Statistics estimates that the total union membership in the United States is from 14 to 16 million, including some 600,000 Canadian workers in the international unions.

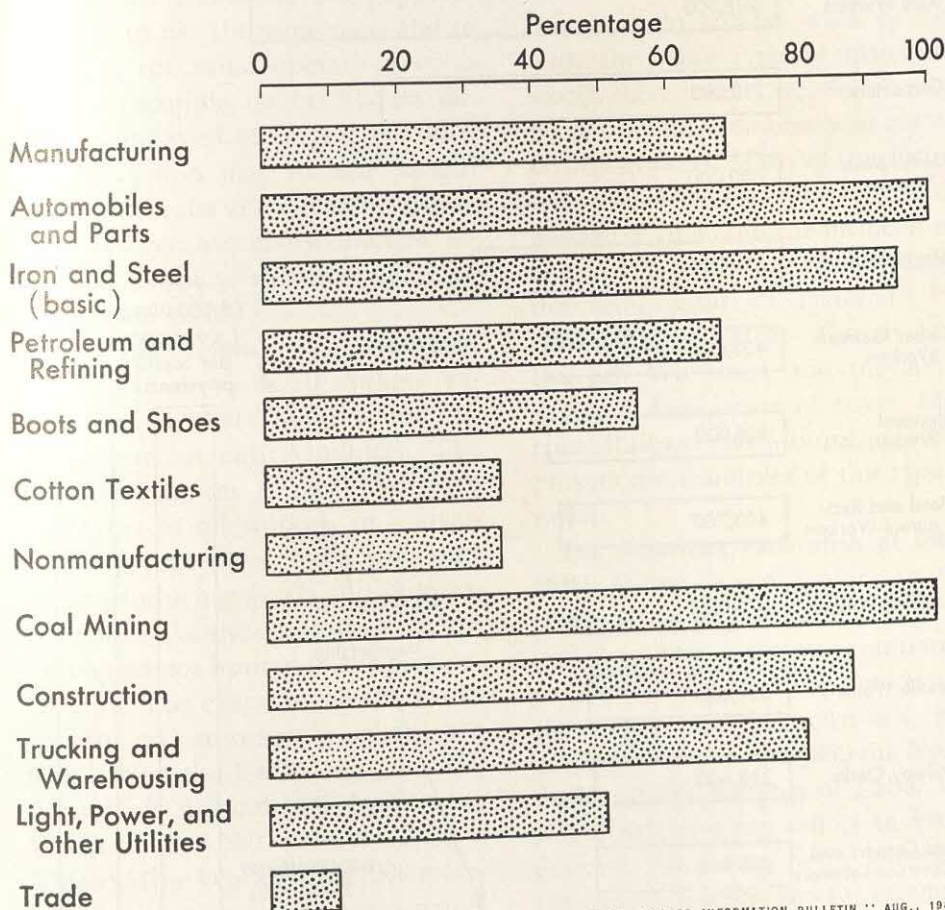
Labor unions are usually organized on a national basis, with local branches in many cities. The local unions are units of the larger parent organizations which determine policies and control the activities of the locals. The local union is a unit like the local chapter of a lodge and has a constitution and bylaws. The local union usually deals with employers for its members and is assisted by the parent organization when necessary. The locals elect officers and appoint experienced workers as "business agents" to advise members and as "shop stewards" in the shop to see that union conditions are observed. In general, there are three types of unions: craft unions, industrial unions, and amalgamated, or multicraft, unions.

**Craft unions.** Craft, or trade, unions—the oldest form of labor organ-

ization in this country—are organized on the basis of a trade. In 1791 the carpenters and shoemakers of Philadelphia, the printers of New

York, and the tailors in Baltimore organized several societies similar to our present craft unions. They bargained over wages and hours, de-

### PROPORTION OF WORKERS UNDER UNION AGREEMENT



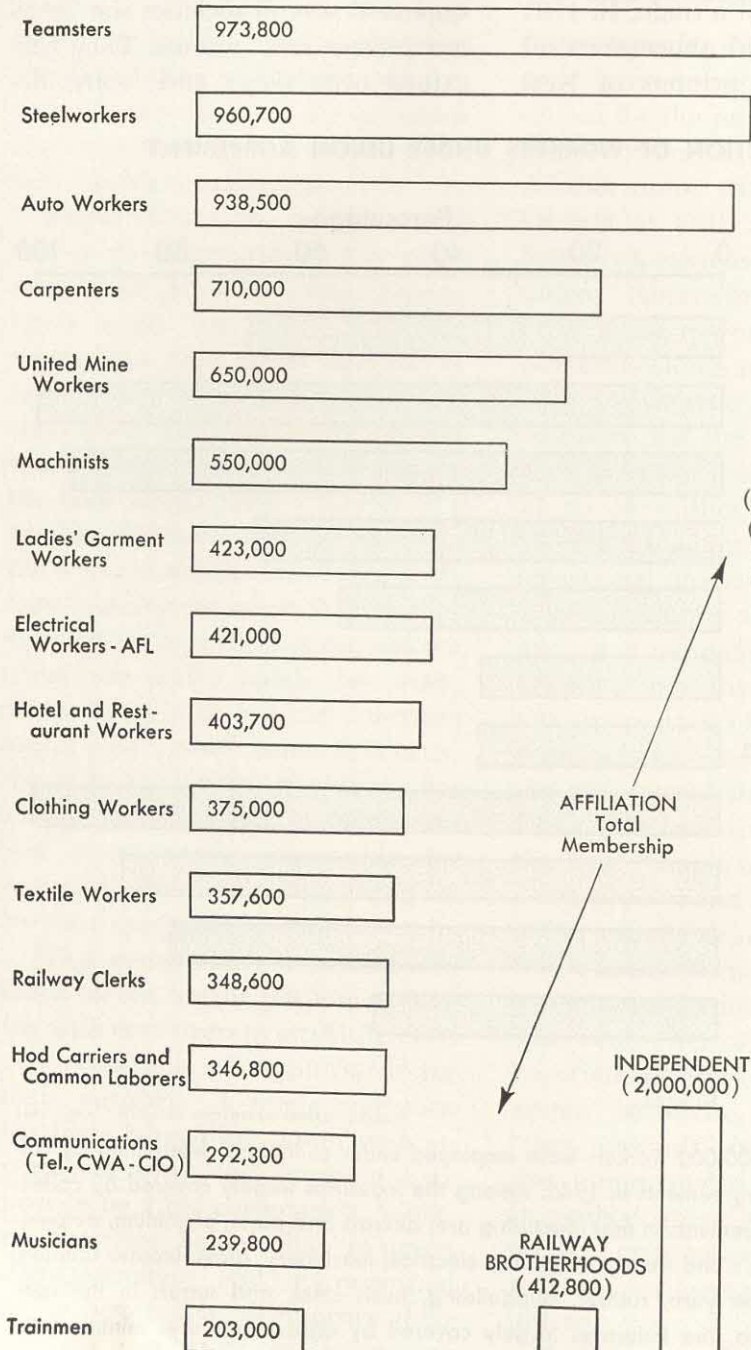
SOURCE: "LABOR INFORMATION BULLETIN," AUG., 1947

Approximately 14,800,000 workers were employed under conditions determined by collective bargaining agreements in 1946. Among the industries largely covered by collective bargaining agreements in manufacturing are: aircraft and parts, aluminum, automobiles and parts, men's and women's clothing, electrical machinery, glass, leather tanning, meat packing, rayon yarn, rubber, shipbuilding, basic steel, and sugar. In the non-manufacturing group, the industries largely covered by agreements are: mining, construction, longshore, maritime, motion-picture production, railroads, telegraph, and local and intercity trucking.



## UNION MEMBERSHIP AND AFFILIATION

### SIXTEEN LARGEST UNIONS



AFFILIATION  
Total  
Membership

AFL  
(7,241,300)  
(per capita  
payments)

CIO  
(6,000,000)  
(3,934,200  
per capita  
payments)

INDEPENDENT  
(2,000,000)

RAILWAY  
BROTHERHOODS  
(412,800)

(See footnote on opposite page)

SOURCE: THE CONFERENCE BOARD, "ROAD MAPS OF INDUSTRY," NO. 753

manded closed shops, engaged in strikes and picketing, regulated apprentice training, and employed "walking delegates" to enforce agreements. The craft union today is a labor organization composed of workers who are trained through apprenticeship to use the same tools and to perform the same operations on a job. For example, the bricklayers' union is composed of bricklayers only. A craft union may include several associated crafts and cut across industry lines because many different industries employ workers with the same trade skills.

**Industrial unions.** The industrial union is made up of all workers (except office workers)—skilled and unskilled—in an entire industry. The industrial union is more inclusive and takes in all workers in a given industry, regardless of the work they do in producing goods and services. It is more like the employer's organization and not limited to any particular craft. For example, all the workers in an automobile plant are members of the United Automobile, Aircraft & Agricultural Implement Workers (938,500 members). The United Mine Workers (650,000 members) is composed of all wage earners in the coal-mining industry, includ-

ing engineers, electricians, carpenters, and others who work in the mines.

**Amalgamated unions.** The amalgamated, or multicraft, unions resulted from the merging of two or more trade or craft unions whose members do similar work or deal with the same type of material—wood, sheet metal, etc. Such unions do not accept members who are unskilled workers. Many of the distinct craft lines have disappeared with the passage of time, but the members are engaged in work that has to do with the same kind of material. The Amalgamated Meat Cutters and Butcher Workmen and the Amalgamated Association of Street, Electrical Railway and Motor Coach Employees are examples of this type of union.

**The American Federation of Labor (AFL).** When several unions or primary labor organizations join together to form a strong organization to promote the common interests of their workers, it is known as a "federation of labor." In 1869 the Noble Order of the Knights of Labor was organized by some tailors in Philadelphia. Soon they were joined by carpenters, miners, and the unions of various other workers. Although it

**Footnote for chart on opposite page:** Figures as of 1949-50. Of the total members of unions with headquarters in the United States (estimated between 14 and 16 million), 675,000 are Canadian members. The 16 largest unions shown in the chart account for 8,193,859 members, or more than half the total union strength.

Of the 215 unions listed in the 1953 *Directory of Labor Unions in the United States* (Bureau of Labor Statistics Bulletin 1127), 109 are affiliated with the American Federation of Labor, 33 with the Congress of Industrial Organizations, and 73 are unaffiliated with either of the two major federations. About seven out of every eight union members are members of unions affiliated with either the AFL or the CIO.



steadily lost ground after 1890 and went out of existence in 1917, this organization served to inform the public of the discontent of large groups of workers in industry and taught wage earners the advantages of a federated labor organization. In 1881 the Federation of Organized Trades and Labor Unions was formed in the interests of skilled craftsmen, and in 1886 this organization became the American Federation of Labor.

The American Federation of Labor is a federation of labor unions in the same manner that our national Government is a federation of states. An individual worker does not belong to the Federation, but he is a member of a local of a national union. For example, a union printer belongs to the International Typographical Union, which has a number of local unions, all of which are affiliated with the American Federation of Labor, but he is not a member of the AFL.

Samuel Gompers of the cigar makers' union was the first president of the AFL. For years the AFL has been an important factor in the American labor movement, and from the first it has favored the *craft* union basis, with only skilled workers admitted to membership. The AFL consists of some 107 national and international unions with a claimed membership of 8 million.

**The Congress of Industrial Organizations (CIO).** The CIO was formed in 1935 when certain locals split away

from the AFL because they were opposed to the craft basis for membership and wished to admit workers on an *industrial* basis. After debating this issue, some of the industrial union leaders got together and formed the CIO. The unions gained many new members through this new organization, and the CIO is a factor in the mass-production industries. The CIO is made up of 33 international unions, claiming 6 million members.

### UNION METHODS

Collective bargaining is a series of employer-union conferences for the purpose of reaching agreement as to the terms and conditions of employment for a definite period. For over a century collective bargaining has been the chief means of advancement for wage earners. As early as 1799 the Philadelphia shoemakers used collective bargaining in a wage dispute. When disputes arise between workers and employers, settlement can sometimes be made through such agreements. The union settles terms and conditions of employment for a certain period of time. Both the worker and the employer are expected to live up to these voluntary trade agreements.

**Strikes.** When workers and employers cannot agree, a strike ordinarily results. A strike is a brief stoppage of work because of discontent or protest on the part of the workers. The number of strikes reached an all-time high in 1952 with 5117 work stoppages. In 1950 labor-management



UNITED PRESS PHOTO

When workers and employers cannot agree and arbitration fails, a strike ordinarily results. A strike is a brief stoppage of work because of discontent or protest on the part of the workers. Workers stop work in a body but expect to return to their jobs when better terms have been obtained with management.

disputes resulted in 4843 work stoppages, involving 2.4 million workers. More than half of all strikes in 1950 were due to wages and related matters; one-fifth were concerned with union recognition, the union shop, discrimination, and other union security issues; one-fifth involved disputes over working conditions; and others were concerned with jurisdictional matters, rivalry between unions, and sympathy strikes. Unions affiliated with AFL were involved in nearly one-half of all work stoppages; CIO in 29 percent; and unaffiliated unions in the others.

In a strike, workers stop work in a body but expect to return to their jobs when better terms have been obtained with management. For a strike

to be effective, all workers must stop their work. Those who continue to work during a strike or accept non-union jobs during that time are called "scabs." Nonunion members who are able to take the places of the strikers are urged not to do so by the union pickets placed around a plant.

Pickets are union representatives posted by labor organizations at the entrances to a plant during a labor dispute for three reasons: (1) to inform the public and employees that a dispute exists; (2) to get all the workers to join the strike; and (3) to prevent others from working on their jobs. Those among the general public who believe the workers are justified in their strikes may refuse to "cross the picket line."



The right to strike is legal in this country. Most unions require a two-thirds vote of their members to call a strike. Union treasurers may pay strike benefits, but the amount of weekly benefits paid is based on minimum living needs during the period of loss of wages. A strike causes a loss of income for both the strikers and employers, it may lead to violence, and it frequently prevents the consumer from obtaining essential goods and services.

A strike is the main form of economic pressure that unions use to obtain their ends with management. Because strikes are so costly to everyone, public agencies have been set up to help workers and employers adjust their disputes without resorting to strikes. For example, most state governments have set up boards of mediation or arbitration.

**Mediation.** When a third party, or mediator, is brought in to help workers and employers settle their disputes, it is called mediation. The mediator offers suggestions and advice, counsels with each side, and helps them to come to a decision for themselves. The Federal Government acts on industrial cases through the Federal Mediation and Conciliation Service, an independent agency created in 1947. This Service aims to prevent or minimize interruptions of the free flow of commerce growing out of labor-management disputes by helping the parties to settle their disputes through conciliation and mediation.

**Arbitration.** If both sides consent to arbitration, the dispute is placed before arbitrators. Neutral arbitrators are selected that listen to both sides of the dispute, study the situation, and finally render a decision. When the decision of the arbitrators has been handed down, both workers and employers are bound to abide by it.

### UNION SECURITY AND CONTROL

In order to maintain union security, unions make agreements with employers to guard against loss of union membership and control over the workers. Such agreements somewhat restrict the freedom of both worker and employer. For example, a high school graduate who applies for a certain job may find the employer answering him like this: "I'd like to employ you, son, but you will have to see the union first." In certain occupations that are unionized, the applicant for a job must meet union requirements and pay certain union dues before he can become a wage earner and enjoy the benefits of the organization. This means that the plant is a "closed shop." Employers generally favor an "open shop" because they are able to hire and fire whom they please, but the unions prefer the closed shop, or the union shop. The differences among these various shops are described below.

**Closed shop.** A closed shop is any shop, plant, mine, or other unit of employment in which the union and

the employer agree that no persons shall be employed who are not members of the union and that all employees must continue in good standing with the union as long as they are employed. In other words, a closed shop is one in which the work of a certain craft is closed to nonunion workers.

**Union shop.** In the union shop the employer may hire persons not already in the union if such workers join the union within a short period after employment. A check-up is usually made by a union representative, such as the shop chairman or steward, and union membership is a condition of continued employment. This agreement aids union security but allows management to control the selection of new employees. Whether or not a shop is to be a union shop is decided by a majority vote of all employees in a shop.

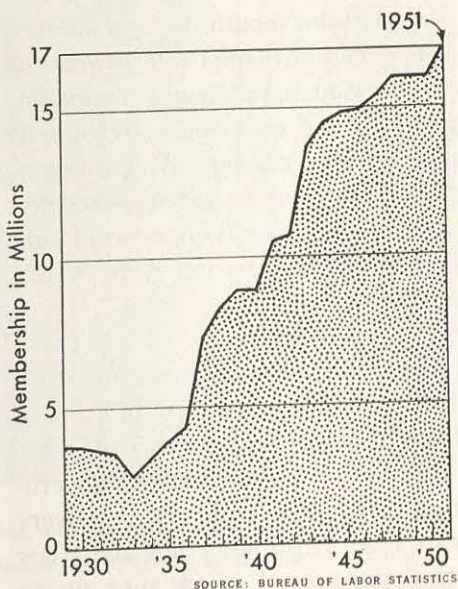
**Preferential shop.** In a preferential shop employees are not compelled to join the union, but union members have preference over nonunion members in some aspects of employment. For example, union members are the last to be laid off in an emergency and the first to be rehired when work picks up.

### LAWS AFFECTING LABOR

Labor organizations have also been active politically in promoting laws concerning hours of labor and other working conditions that cannot be secured by direct bargaining with employers. In 1913 the United States

Department of Labor was created "to foster, promote, and develop the welfare of the wage earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment." Since then many laws, both federal and state, have been passed in the interest of the worker. A few of these laws are briefly summarized in the following sections.

### TREND IN UNION MEMBERSHIP



The United States trade-union movement has increased from less than 3 million members in 1933 to about 17 million in 1951. These figures include 800,000 Canadian workers who are members of unions with headquarters in the United States. These membership figures are based upon reports and statements issued by the trade-union organizations in their official journals, reports, or convention proceedings and tabulated by the Bureau of Labor Statistics.



**Child labor laws.** "Child labor" refers to the employment of children who are either too young to work or who are employed on unsuitable or unsafe jobs in industry. Early in the 1800's oppressive child labor, especially in "sweatshops" and small unclean factories, was commonplace. For example, in 1808 a cotton factory in Baltimore ran this advertisement in the newspaper:

This Manufactory will go into operation in all this month, where a number of boys and girls *from 8 to 12 years of age* are wanted, to whom constant employment and encouraging wages will be given . . . citizens having a knowledge of families who have children destitute of employ, will do an act of public benefit, by directing them to this institution.

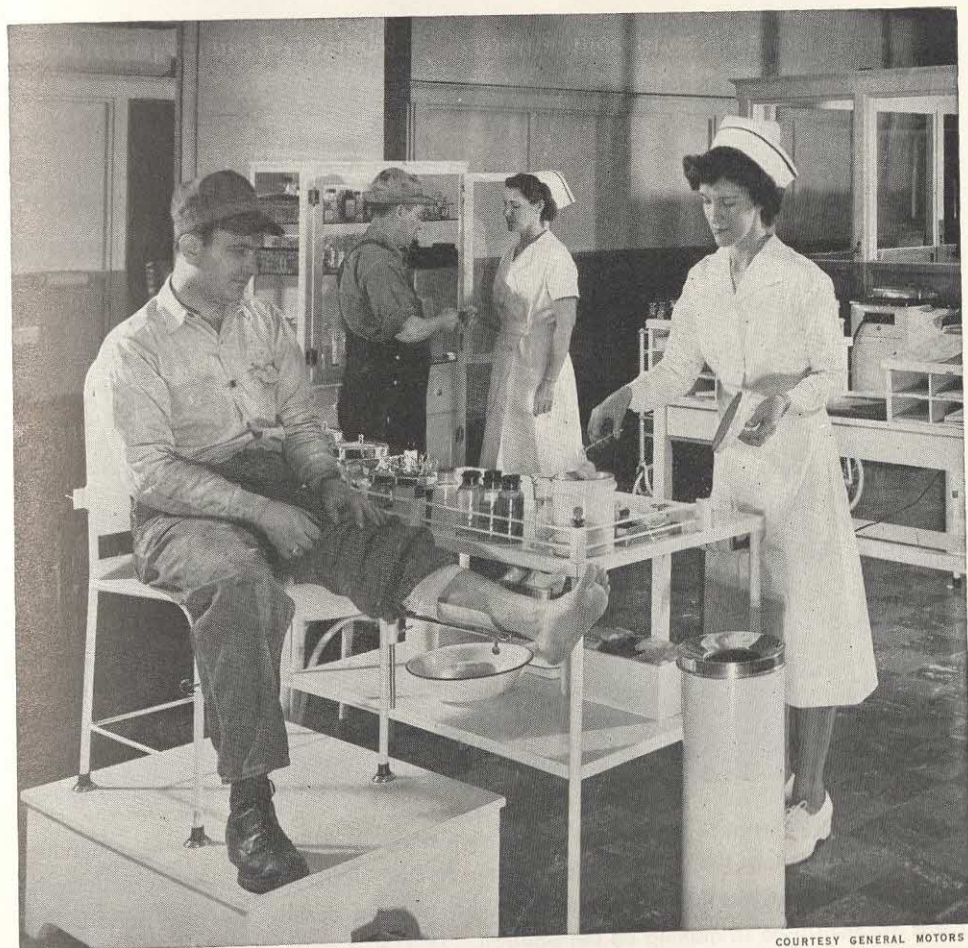
Today children are more fortunate in being protected in their early years from oppressive child labor because both state and federal governments regulate child labor. Every state has a child-labor law and a law requiring school attendance up to a certain age—usually 16, but 17 or 18 in some states. There are certain exceptions, and the laws vary. Some child-labor laws apply to all occupations, some exclude agriculture and domestic service, and others concern work in factories and stores.

Such laws are needed to insure that children's health is not impaired and that they have time for school and play. An employer of children of an

age required by law to be in school must have on file an unexpired employment certificate showing that each child is legally entitled to hold his job.

**Workmen's Compensation.** Workmen's Compensation is a system of insurance, established by law, by which money benefits are paid to workers who are injured on the job, whether the cause was the carelessness of the worker or the negligence of the employer. All states have enacted Workmen's Compensation laws, but the laws in different states vary widely. Some permit the employer to carry insurance or not, but if he chooses not to carry this insurance he must be willing to pay for similar service to his employees for personal accidents. Eight states have established a state insurance fund. Such boards as the Workmen's Compensation Commission administer these laws, review claims, and make awards to workers who have claims. People have come to believe that the costs of such occupational injuries and diseases are actually a part of the cost of production and should be spread over the industry as a whole. The costs are first charged to the individual employer who, in turn, passes them along by increasing the price of his goods to the consumer or the community.

In 1916 the United States Employees' Compensation Commission was created by an act of Congress to administer the provisions of the Act for Workmen's Compensation bene-



COURTESY GENERAL MOTORS

All states have Workmen's Compensation laws, but the laws differ in different states. Some states allow the employer a choice between carrying this insurance or paying for a similar service to his employees in case of personal accidents. Other states have established a state insurance fund. In general, people have come to believe that the costs of medical, surgical, and hospital service for injuries received in the line of duty are a part of the cost of production. Practically all large companies provide first-aid treatment for injured workers.

fits for civil employees of the United States. Later, similar protection was provided for all workers in the Federal Government. Compensation includes medical, surgical, and hospital services for personal injuries received

in line of duty. In case the injury causes death, payments are made to certain dependents. Other government workers—longshoremen, harbor workers, and men who repair vessels—came under this Act in 1927.





COURTESY WRIGHT AERONAUTICAL CORP.

Workers "punch the clock" so that companies will have reliable data for their accounting departments. By inserting his time card in an electric clock, the worker automatically makes a record of the number of hours he has worked during any pay period. The cards are then used in making up the pay roll.

**Social Security Act (1935).** The Social Security Act of 1935 and amendments set up a governmental program of family subsistence to prevent want. The Act provides several separate programs, but some types of workers are not covered: railroad workers, farm owners, some state and municipal employees, public school teachers, and ministers. Two nationwide systems of social insurance under this Act protect wage earners and their families against loss of income

due to unemployment, old age, and death. The Act also provides for public assistance and child welfare.

*Old-Age and Survivors Insurance.* An all-federal system of Old-Age and Survivors Insurance is operated by the United States Government through the Social Security Administration, under the Department of Health, Education, and Welfare, with 10 regional offices and 512 field offices. The plan provides for old-age benefits of from \$20 to \$80 per

month to an insured worker, after the wage earner reaches the age of 65 and leaves employment that is covered by the Social Security Act. Family benefits may be as much as \$150 a month. It also provides for survivor's benefits to his family when the worker dies, whatever his age. The insurance fund is accumulated through payments from the earner's wages and from his employer's contributions.

The Social Security Administration keeps a separate account for each worker under his name and social security number. The number appears on the worker's social security card, and more than 93 million account numbers have been issued. The employer must have the social security number in order to report accurately a worker's wages and social security payments to the Government. Perhaps you have a social security number on file if you have ever been employed.

*Unemployment Insurance Service.* The federal-state plan of unemployment insurance is a cooperative venture under which each state sets up its own law and state administrative agency, and the Federal Government pays the administrative costs. Unemployment benefits are paid from state pay-roll taxes on employers. All states have enacted unemployment insurance laws which incorporate basic standards of the Social Security Act. Unemployment insurance provides unemployed workers with a small weekly income to help them over

short periods of unemployment. Not all workers are covered—only those covered under their state unemployment insurance law who are able and willing to work. The insurance fund is accumulated through contributions of the employer and is administered through the state department of labor. The worker is paid only when a wage loss occurs.

*Public Assistance.* Social insurance, in general, is a plan for building a fund for the insured worker that will help him to some extent when he suffers loss through unemployment, old age, disability, or other cause. It takes time, of course, for workers to earn enough wage credits to qualify for benefits, and many persons who do not have these benefits would suffer if it were not for a program of public assistance. The Social Security Act provides public assistance for the benefit of needy aged individuals, for the needy blind, for needy dependent children, and for persons permanently and totally disabled. The Federal Government matches state funds appropriated for public assistance. The Act requires that a state which receives federal funds must have a state-wide plan in operation and the plan must receive financial support from the state. All 48 states are now participating.

*Children's Bureau.* In addition, the Social Security Act provides grants to states for maternal and child welfare. The Children's Bureau administers three programs in this area: maternal and child health



services; services for crippled children; and child welfare services.

**National Labor Relations Act of 1935 (Wagner Act).** The National Labor Relations Act, passed in 1935, became the model for state laws of a similar nature. This Act guarantees the workers "the right to self-organization to form, join, or assist labor organizations, to bargain collectively through representatives of their own choosing, and to engage in concerted activities for the purpose of collective bargaining or other mutual aid or protection."

The Act also prohibits certain unfair labor practices—such as interfering with workers' rights to join a union; interfering with any labor organization within an industry; discriminating in hiring or firing workers; and refusing to bargain collectively with the elected representatives.

In introducing the Act, Congress held that the law would safeguard commerce from interruption and promote the flow of goods. It would remove certain sources of industrial strife. It would encourage peaceful adjustment of disputes concerning wages, hours, and working conditions. It would restore equality of bargaining power between employers and employees.

Only industries that send their products across state lines are under the Wagner Act. The Act does not apply to industries within a state. However, the following nine states have already enacted their own la-

bor-relations laws: Colorado, Massachusetts, Michigan, Minnesota, New York, Pennsylvania, Rhode Island, Utah, and Wisconsin.

The National Labor Relations Board was established to administer the Wagner Act.

Opponents of the Wagner Act criticized it as "revolutionary and one-sided" because it shifted direct regulation of conduct in labor disputes affecting commerce from the states to the Federal Government. Efforts to amend the Act began at once and ended in the passage of the Labor Management Relations Act of 1947 (Taft-Hartley Act).

**Labor Management Relations Act of 1947 (Taft-Hartley Act).** As an amendment to the Wagner Act, Congress passed the Taft-Hartley Act on June 23, 1947, against strong opposition of organized labor. The Wagner Act had given unionism special protection under which the unions prospered and grew strong. The Taft-Hartley Act suggested that unions must accept certain responsibilities of the law and aimed to equalize legal responsibility between labor organizations and employers.

The Taft-Hartley Act provides for additional facilities for the mediation of labor disputes affecting commerce and defines the jurisdiction of governmental activity in labor disputes. The Act sets out procedures to be followed in case of national emergency disputes—means of delaying strikes which might imperil the national health and safety.

While leaving the central theme of the Wagner Act intact—the right of organization for collective bargaining—the Taft-Hartley Act added many restrictions: It prohibited closed shop; required unions to file financial statements; and required officials of labor organizations to file noncommunist affidavits before having recourse to the National Labor Relations Board. The restrictions placed on labor organizations were fostered by employer groups in order to achieve what they considered collective bargaining by having the same obligations on both sides. Labor objected to the Act because they claimed that conflicting policies curtailed their freedom.

**Fair Labor Standards Act (1938) and amendment (1949).** The Fair Labor Standards Act, better known as the Wage and Hour Act, was passed in 1938 to establish minimum wages. This was the first time that Congress had passed a law to influence the fixing of wages. The Act also prohibits “oppressive child labor” in all establishments producing goods for interstate commerce.

This Act was amended in 1949 (effective January 25, 1950), and the administration of the Act as amended was assigned to the Administrator of the Wage and Hour Division of the Department of Labor. Now each employee engaged in interstate commerce (commerce across state lines), or in the production of goods for interstate commerce, must be paid at the rate of not less than 75 cents an

hour, and time and one-half for overtime (40-hour week).

The Fair Labor Standards Act also prohibits directly the employment of children under 16 years of age (under 14 years of age in some work and under 18 years of age in certain “hazardous” occupations). It also bars from interstate commerce goods produced in places where these regulations are not adhered to.

In signing the measure, President Truman said: “The enactment of the Fair Labor Standards Amendment of 1949 is a major victory in our fight to promote the general welfare of the people of the United States. I regret that the new act exempts from its provisions some workers who have been covered heretofore and that it fails to extend coverage to many other groups of workers who need its protection. But the improvements made by the new act will go far toward achieving our basic purpose of assuring minimum labor standards necessary for health, efficiency, and general well-being of workers.”

The amended Fair Labor Standards Act meant direct wage increases for approximately 11½ million workers who were receiving less than 75 cents an hour; further restrictions against oppressive child labor; encouragement of employment on an annual basis; bringing within coverage of the 75-cent minimum wage employees of air lines and fish and sea-food canneries; and further restrictions on industrial home work.



### For Discussion

1. Why have so many labor problems arisen in recent years?
2. What is meant by the "machine age"?
3. Why have workers organized into labor unions?
4. Explain the differences between an international union, a trade or craft union, an industrial union, and a federation.
5. Compare the AFL and CIO.
6. What is meant by a "strike"?
7. Explain what is meant by mediation and arbitration.
8. Define the following terms: (a) closed shop; (b) union shop; (c) preferential shop.
9. Tell about the child labor laws of today.
10. Discuss the following laws briefly, showing how they benefit or do not benefit the worker: (a) Workmen's Compensation; (b) National Labor Relations Act; (c) Social Security Act; (d) Fair Labor Standards Act and amendment; and (e) Taft-Hartley Act.

### What to Read

- American Labor Unions; What They Are and How They Work*, Florence Peterson. Harper & Brothers, New York, 1945. 338 p.
- The American Story of Industrial and Labor Relations*. New York State Joint Legislative Committee on Industrial and Labor Conditions. Williams Press, Albany, N.Y., 1943. 315 p.
- Brief History of the American Labor Movement*. Bureau of Labor Statistics Bulletin 1000. U.S. Government Printing Office, Washington 25, D.C., 1951. 66 p. (25 cents)
- Directory of Labor Unions in the United States, 1953*. Bureau of Labor Statistics Bulletin 1127. U.S. Government Printing Office, Washington 25, D.C., 1953. 46 p. (35 cents)
- Federal Labor Laws and Agencies; a Layman's Guide*. Bureau of Labor Standards Bulletin 100. U.S. Government Printing Office, Washington 25, D.C., 1948. 94 p. (25 cents)
- "50 Years' Progress of American Labor," *Monthly Labor Review*, July 1950, Bureau of Labor Statistics. U.S. Government Printing Office, Washington 25, D.C. (50 cents)

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern labor relations.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Bring to class and discuss newspaper cartoons showing labor conditions.
<b>BUSINESS:</b>	Discuss money losses to industry and to workers through strikes.
<b>ENGLISH:</b>	Obtain a copy of one act of Congress concerning labor and make a short summary of it in simple English.
<b>HEALTH:</b>	Why do unions stress healthful working conditions for workers?
<b>HOME ECONOMICS:</b>	How does the International Ladies' Garment Workers' Union benefit those who make women's clothes in our cities? (Ask for the Union's free materials, 1710 Broadway, New York 19, New York.)
<b>LANGUAGES:</b>	How are international conferences on labor relations, with many members speaking different languages, carried on so that everyone understands speeches and remarks?
<b>MATHEMATICS:</b>	Compare wage rates in your community for different workers under union contracts.
<b>MUSIC:</b>	Discuss the musician's union and how it affects small dance orchestras.
<b>OCCUPATIONS:</b>	Choose one example of a unionized occupation from each of the seven major occupational classifications and show how it is affected by union organization.
<b>SCIENCE:</b>	Bring to class any newspaper clippings showing how labor relations concern employment in the atomic energy program.
<b>SHOPWORK:</b>	Explain the following terms: open shop, closed shop, preferential shop, union shop, and modified union shop.
<b>SOCIAL STUDIES:</b>	Bring to class any current newspaper items concerning strikes in different fields of work.



*Labor in America*, Harold U. Faulkner and Mark Starr. Harper & Brothers, New York, 1949. 338 p.

*Labor Problems in American Industry*, Carroll R. Daugherty. Houghton Mifflin Company, Boston, 1948. 1021 p.

*Opportunities in Public Relations*, Shepard Henkin. Vocational Guidance Manuals, Inc., New York, 1946. 76 p.

*United States Government Organization Manual 1953-54*. U.S. Government Printing Office, Washington 25, D.C., 1953. 742 p. (\$1)

## CHAPTER 24 GOVERNMENT WORK—

### A FORM OF INDUSTRY

**G**overnment service, as a form of industry, includes practically all of the occupations mentioned in this book. For that reason, before you consider working for the Government, you must choose the kind of work that you would like to do. Work in the Government is much the same as that in private industry, because each different occupation requires trained workers in a particular field. Government work is a fertile field of opportunity. Occupations in the Government include every kind of known business or profession from A to Z—from accountants and anthropologists to zoologists.

**Kinds of jobs.** Federal workers may manage experimental farms, where they grow crops scientifically, raise and protect fish and game, work in the forests and mines, manufacture munitions, operate the Alaskan railroad or the Panama Canal, build ships and airplanes, work as painters, or manage offices in Washington and in other cities.

The Government is the greatest

single employer of clerical workers, because every government office requires the help of a clerical staff of file clerks, typists, stenographers, and secretaries.

The types of workers employed include administrators, assistants, specialists, research workers, postal workers, and skilled and unskilled workers.

**State and city Civil Service.** Nineteen states have civil service laws outlining work opportunities, and all states have Civil Service for employees engaged in social security work. In addition, about 900 cities, large and small, use a merit system to employ workers for administrative positions, police- and fire-department jobs, health and welfare services, and public utilities. State and city employees in government work teach in the public schools and colleges, care for the sick in hospitals, fight fires, guard citizens from lawbreakers, engage in health work, and make chemical analyses of foods and water. No standard system of selecting workers, however, is in effect in state and local



systems of government. Therefore, general statements concerning Civil Service cannot be made except for the federal system. Announcements of examinations for jobs in state and local governments are mailed upon request from the state capitol, county courthouse, or city building.

**Federal Civil Service.** Under George Washington, the Federal Government employed such workers as postmasters, customs officers, clerks in the capital city, and a few others outside of military service. State governments likewise employed workers in a few fields. But for many years the variety of work in federal, state, and local governments was limited.

Until 1883, applicants for government work got their jobs through the "spoils system," by which political appointees gave jobs to their friends and relatives, often disregarding a person's qualifications for a job. Their slogan was, "To the victors belong the spoils." Whenever a political party came into power, old employees lost their jobs and new party members replaced them because government jobs were distributed to members of the winning party as a payment of party debts.

The Pendleton Civil Service Act (1883) changed this questionable practice, and the U. S. Government established the merit system for selecting government workers. At that time workers in the federal Civil Service numbered 130,000 employees. The numbers increased gradu-

ally until June 1943, during World War II, when the peak of 3,002,453 federal employees was reached.

By March 1954 the number had been reduced to 2,353,200 including all government workers in this country and overseas, or 2,173,000 in the United States alone. Of the former figure, about 99 percent were in the executive branch of the Government.

**Ways to enter government service.**

There are three ways to enter government employment: (1) through election to office; (2) through patronage, or having "pull" enough to get a politically controlled job; and (3) through Civil Service, known as the merit system. Political representatives are elected by the people to hold office and receive salaries from the Government, but the proportion of such workers is small.

The United States Civil Service Commission, Washington 25, D. C., recruits workers from all over the country by holding competitive examinations for government positions. The examinations are of two types: (1) assembled and (2) unassembled.

*In assembled examinations* applicants gather at a certain specified place to take written examinations and tests. For example, a typist will take an assembled examination consisting of three parts: a general test; copying from plain copy; and copying from rough draft. For such an examination the Government furnishes typewriters, or individuals



COURTESY U. S. CIVIL SERVICE COMMISSION

Applicants for certain Civil Service jobs must take written examinations. Such tests are called "assembled examinations" because the applicants meet in one place to answer the questions. "Unassembled examinations" are provided for many professional occupations; these are long application blanks filled out at home showing education, experience, publications, and accomplishments.

may bring their own typewriters if they wish.

*In unassembled examinations* candidates are not required to meet at all. They do not take written examinations. Each candidate fills out his own application blank, on which he submits information about his own qualifications, education, experience, and publications, if any. His

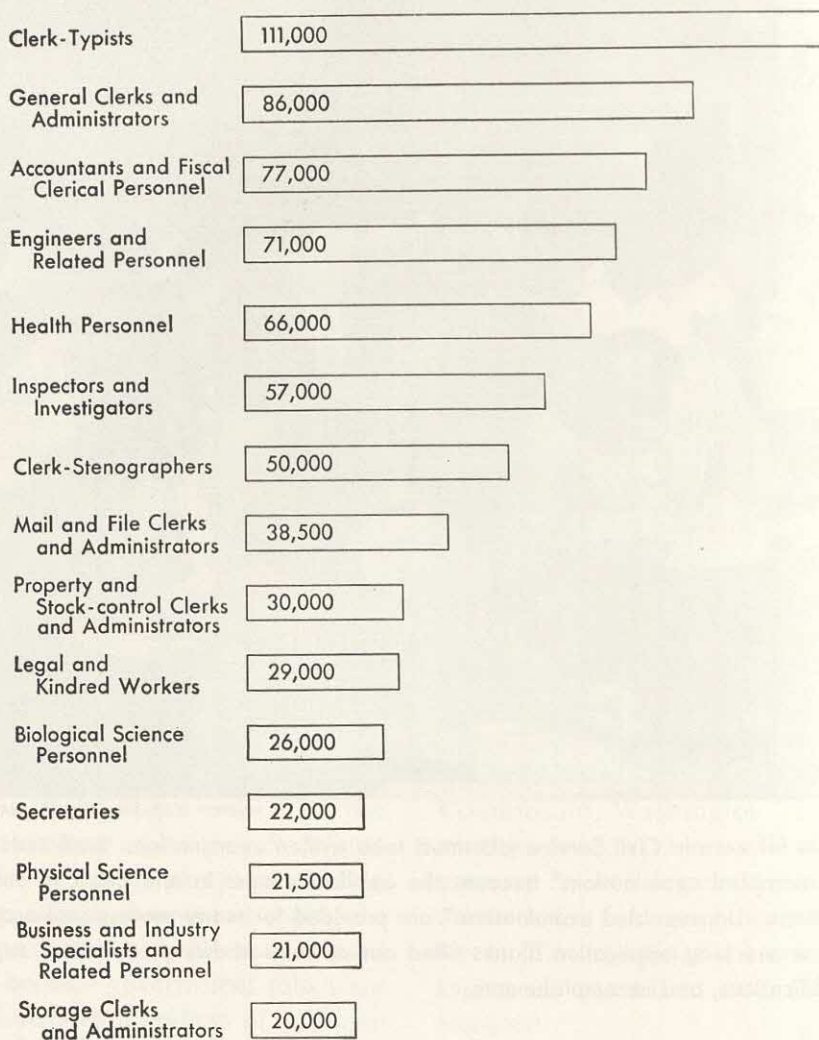
rating is based upon this information. Unassembled examinations are usually given for professional and scientific positions, high-grade technical work, and mechanical trades.

Those who pass the examinations have their names placed on a register of eligibles. From these registers, the appointing officers in different departments and agencies receive



## WHITE-COLLAR OCCUPATIONS IN FEDERAL GOVERNMENT

### LARGEST GROUPS EMPLOYED IN JUNE, 1951:



SOURCE: BUREAU OF LABOR STATISTICS (1951)

White-collar workers in the Federal Government are in more than 450 different administrative, professional, and clerical occupations. About 111,000 workers, the largest group, are clerk-typists. A few jobs are found only in the Government, as, for example, lighthouse engineer and patent and trade-mark interference examiner. As a result of expanded defense activities over the 4-year period 1947-51, the number of white-collar workers increased by one-third, particularly in such occupations as meteorology, physics, electronics, mathematics, cartography, engineering, etc. Only one out of five white-collar workers is employed in Washington, D. C. By March 1954 the total number of all federal employees in the United States alone was 2,173,000.

three names of the best-qualified candidates on the list. These appointing officers then scan the qualifications of each of the three individuals recommended and select *one* for the job.

Civil Service examinations are not held at any regular time but are announced as the need arises. Announcements appear on the bulletin boards of local post offices, in the columns of the local newspaper, and over the radio. By writing to the U. S. Civil Service Commission, Washington 25, D. C., announcements of examinations in special fields of work, such as typing, education, or engineering, may be obtained. It is unwise and unnecessary to go to Washington to take a Civil Service examination. Examinations on a nation-wide scale are generally given in nearly 600 different cities.

### CLASSIFICATION OF GOVERNMENT POSITIONS, 1949

As a result of the Classification Act of 1949, work in the Government is grouped into two main schedules: (1) "General Schedule," for which the symbol "GS" is used, and (2) a "Crafts, Protective, and Custodial Schedule," for which the symbol "CPC" is used. These two schedules and the grades within them are described briefly below.

**1. General Schedule (GS).** In the General Schedule, government positions are divided into 18 grades of jobs, according to difficulty and re-

sponsibility, from GS-1, the lowest grade, to GS-18, the highest grade. For each grade of work certain criteria are emphasized:

1. Amount of supervision required
2. Extent to which the worker exercises independent judgment
3. Nature of work: in office, business, or fiscal operations; in professional, scientific, or technical work
4. Amount of training required
5. Amount of experience required
6. Working knowledge of special subject matter or of complex subject matter

The first four grades of work (GS-1, GS-2, GS-3, GS-4) consist of jobs that require immediate or general supervision. That is, employees in these grades work under a supervisor who more or less lays out the day's work for them. Employees in higher grades (GS-5 through GS-10) work under general supervision, and those in grades above GS-10 work under general administrative supervision.

Exercise of independent judgment is limited in the first two grades (GS-1 and GS-2) and increases with the higher grades. For example, employees in grades GS-9 and GS-10 are given considerable latitude, and those in still higher grades are given wide latitude in using independent judgment.

The nature of the work increases in difficulty from Grade GS-1 to GS-18. In office work concerning of-





COURTESY U. S. DEPT. OF HEALTH, EDUCATION, AND WELFARE

**A file clerk (1-17)** works in a file room or office, filing letters and records so that they may be found readily. A letter misplaced is a letter lost. File clerks are hired in every department of the Government and all over the world.

fice, business, or fiscal operations, duties of workers in the first grades are simple and routine—for example, copying manuscripts on a typewriter. In the higher grades, the difficulty of the work increases from GS-3, “somewhat difficult and responsible” to GS-10, “highly difficult and responsible.” In the higher grades, work of marked difficulty and of a very high order is de-

manded. Difficulty of work concerning professional, scientific, or technical activities increases from elemental in the first grade to “a thorough and fundamental knowledge” in grade GS-10. The higher grades demand employees who are able to direct research or to serve as heads of major organizations or bureaus.

Training and experience factors are important in the higher grades. Only a moderate amount of training is demanded for the first four grades (GS-1 to GS-4) but “a considerable amount” of training and experience—generally a college education—is necessary for grade GS-5. Workers must have considerable specialized, supervisory, or administrative experience for grade GS-10 in order to demonstrate capacity for sound, independent work. In the higher grades such experience must demonstrate leadership. Examples of requirements for grades GS-1 and GS-10 are summarized below.

*Grade GS-1.* The duties of the lowest grade (GS-1) are performed “under immediate supervision with little or no latitude for the exercise of independent judgment,” and include “(1) the simplest routine work in office, business, or fiscal operations, or (2) elementary work of a subordinate technical character in a professional, scientific, or technical field.”

*Grade GS-10.* “. . . includes all classes of positions, the duties of which are (1) to perform, under gen-

eral supervision, highly difficult and responsible work along special, technical, supervisory, or administrative lines in office, business, or fiscal administration, requiring (a) somewhat extended specialized, supervisory, or administrative training and experience which has demonstrated capacity for sound independent work, (b) thorough and fundamental knowledge of a specialized and complex subject matter, or of the profession, art, or science involved, and (c) considerable latitude for the exercise of independent judgment; (2) to perform other work of equal importance, difficulty, and responsibility and requiring comparable qualifications."

*GS basic pay rates.* The Classification Act of 1949 increased the rates of pay for government positions effective October 30, 1949. Pay rates were again increased, effective July 1, 1951, as shown in the table below. All new appointments are

made at the minimum rate of the appropriate grade. Each grade up to and including GS-10 has seven steps, and periodic pay increases within grades are provided after 52 and 78 calendar weeks.

**2. Crafts, Protective, and Custodial Schedule (CPC).** The 10 grades of jobs in the Crafts, Protective, and Custodial Schedule (CPC) are briefly summarized as follows:

*Grade CPC-1:* "... to run errands, to check parcels, or to perform other light manual tasks with little or no responsibility."

*Grade CPC-2:* "... to handle desks, mail sacks, and other heavy objects, and to perform similar work ordinarily required of unskilled laborers; to pass coal; to clean office rooms; to perform regular messenger work with little responsibility."

*Grade CPC-3:* "... to perform, under immediate supervision, custodial or office labor work with some degree of responsibility; to operate

**GENERAL SCHEDULE: BASIC PAY RATES, EFFECTIVE MARCH 1, 1955**

Grade	Minimum	Maximum	Grade	Minimum	Maximum
GS-1	\$2690	\$3200	GS-11	\$ 6390	\$ 7465
GS-2	2960	3470	GS-12	7570	8645
GS-3	3175	3685	GS-13	8990	10065
GS-4	3415	3925	GS-14	10320	11395
GS-5	3670	4480	GS-15	11610	12690
GS-6	4080	4890	GS-16	12900	13760
GS-7	4525	5335	GS-17	13975	14620
GS-8	4970	5780	GS-18	14800	
GS-9	5440	6250			
GS-10	5915	6725			





COURTESY U. S. COAST AND GEODETIC SURVEY

The rodman (7-87), a semiskilled worker, holds the level rod, or stadia rod, at points designated by the surveyor (0-64). This leveling party of the U. S. Coast and Geodetic Survey is working in Boston on geodesy—the science of measuring the size and shape of the earth.

paper-cutting, canceling, envelope-opening, or envelope-sealing machines; to fire and keep up steam in low-pressure boilers used for heating purposes, and to clean boilers and oil machinery and related apparatus; to operate passenger automobiles or light-duty trucks; to pack goods for shipment; to work as leader of a group of charwomen; . . ."

*Grade CPC-4:* ". . . to perform, under general supervision, custodial work of a responsible character; to guard office or storage buildings; to supervise AND DIRECT a force of unskilled laborers; to fire and to keep up steam in high-pressure boilers . . ."

*Grade CPC-5:* ". . . to guard property of great value while in transit; to supervise the operation and maintenance of a low-capacity heating plant and its auxiliary equipment . . ."

*Grade CPC-6:* ". . . to have immediate direction of a detachment of building guards, to perform the work of a skilled mechanic; to repair office appliances; . . ."

*Grade CPC-7:* ". . . to assist in the general supervision of a force of

building guards; to work as leader of a group of skilled mechanics; . . ."

*Grade CPC-8:* ". . . to have general supervision over a force of building guards; to supervise the operation of a mechanical shop; to direct skilled mechanics and other employees . . ."

*Grade CPC-9:* ". . . to direct supervisory and office assistants, mechanics, guards, elevator operators, laborers, janitors, and other employees engaged in the custody, maintenance, and protection of a public building . . ."

*Grade CPC-10:* ". . . to direct supervisory and office assistants, mechanics, guards, elevator operators, laborers, janitors and other employees engaged in the custody, maintenance, and protection of a group of public buildings."

*Pay rates for CPC grades.* As of July 1, 1951, rates of pay for CPC employees were increased. All new appointments are made at the minimum rate of the appropriate grade. Each grade has seven steps, and periodic pay increases within grades are provided after 52 calendar weeks.

#### CPC SCHEDULE: BASIC PAY RATES, EFFECTIVE MARCH 1, 1955

Grade	Minimum	Maximum	Grade	Minimum	Maximum
CPC-1	\$1945	\$2335	CPC-6	\$3440	\$3950
CPC-2	2600	3050	CPC-7	3695	4355
CPC-3	2745	3255	CPC-8	4020	4830
CPC-4	2955	3465	CPC-9	4460	5270
CPC-5	3200	3710	CPC-10	4905	5715





COURTESY U. S. COAST AND GEODETIC SURVEY

**A draftsman (0-48)** prepares clear, complete, and accurate working plans and detail drawings from rough or detailed sketches or notes for engineering or manufacturing purposes. There are many kinds of draftsmen in the Government: architectural, commercial, electrical, geological, map, mechanical, radio, and topographical.

Basic pay rates for CPC grades are shown in the table on page 393.

#### GOVERNMENT POSITIONS IN VARIOUS FIELDS

**Art work.** Quite a number of government agencies hire photographers to take official pictures for publicity purposes. Some agencies maintain art sections where artists are employed to prepare drawings and illustrations for publications, prepare exhibits, and assist in museum work.

**Auditing.** Accountants and auditors are employed in most departments

of the Government to keep check on financial affairs and to see that moneys are handled properly.

**Communications.** Many workers are employed in the Federal Communications Commission in the field of radio, television, telephone, and telegraph. Radiomen are concerned with monitoring the air waves, operating and inspecting sending stations, and building government equipment. Telegraphers operate the telegraph, Teletype, and Simplex machines. Telephone operators handle large switchboards for various departments.

**Crafts.** Skilled workers find thousands of opportunities with the Government in such agencies as the Department of National Defense, U. S. Forest Service, Bureau of Reclamation, and Tennessee Valley Authority. Great factories of the navy yards employ workers to manufacture and repair military and naval equipment of all kinds. Several hundred apprentices in the navy yards, arsenals, and in the Government Printing Office serve 4 or 5 years in such trades as aircraft mechanic, blacksmith, boat-builder, boilermaker, coppersmith, electrician, machinist, painter, patternmaker, plumber, sheet-metal worker. Those who pass examinations upon the completion of their training period receive certificates as journeymen (full-fledged mechanics).

**Economics.** Many of the newer agencies hire specialists to work in such fields as economics, statistics, and sociology. These specialists study and analyze the economic and social forces, such as wages, hours, taxes, and housing, at work in the United States. The work requires college training and experience, but college graduates without experience may find opportunities.

**Education.** Educational services in the Federal Government are not extensive. Most educational workers are employed in the Office of Education, the Veterans Administration, and in special libraries of the various bureaus and departments. The state and local governments, however, are

responsible for hiring teachers for public schools, and teachers form the largest single group of government employees.

**Foreign service.** The Department of State handles the foreign service work and maintains offices throughout the world: 66 embassies, 10 legations, 129 consulates, 57 consulates general, 30 consular agencies, and 40 U. S. Information and Education (USIE) offices. Each of these offices has its staff of workers. The diplomatic officers of embassies and legations are headed by ambassadors and ministers who deal with political relations between countries. The consular officers handle commercial, citizenship, and immigration matters. Special examinations in the field of foreign service are held by the Department of State (not Civil Service) for applicants from 21 to 35 years of age. Successful candidates take preliminary training and are assigned to the Foreign Service Institute, or training school, for several weeks. In 1953 there were 8,633 Americans employed and 12,276 alien employees in foreign service work. Full information about job opportunities and requirements for foreign service may be obtained by writing to the Secretary of State, Washington 25, D. C.

**Health.** Large numbers of trained persons find employment with the Public Health Service and in government hospitals—especially hospitals for veterans, prison inmates, and Indians. Workers include physi-





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

**A scientific helper (0-50)** repairs a broken warp end on a loom at the U. S. Department of Agriculture's Southern Regional Research Laboratory at New Orleans. The Cotton Processing Division produces many types of experimental cotton cloth for specific purposes.

cians, trained nurses, dietitians, X-ray technicians, laboratory technicians, and other professional and semiprofessional employees who may serve in the United States or outlying parts.

**Law.** Most government agencies employ lawyers who have passed bar examinations. The Department of Justice—the general legal agency of the Government—employs many lawyers. Other agencies, including the Federal Bureau of Investigation, the Federal Trade Commission, the

Interstate Commerce Commission, the National Labor Relations Board, the Securities and Exchange Commission, and the Federal Communications Commission, hire people able to pass on legal documents, prepare cases, carry on investigations, and hold hearings.

**Law enforcement.** Inspectors and investigators are employed in great numbers in government service. Their work furnishes the basis for many detective stories, comic strips, and movies. The crime investigators

are popularly known as "G-men." Immigration inspectors, sanitary inspectors, and others also have power to enforce laws by making arrests, searching, and seizing.

The department of the Army maintains three intelligence services. The Navy Department maintains the Office of Naval Intelligence. The Central Intelligence Agency, established in 1847, coordinates the intelligence activities of the Government in the interest of national security.

The United States Treasury Department employs enforcement agents in five branches: (1) United States Secret Service; (2) Bureau of Narcotics; (3) Alcohol Tax Unit and (4) Intelligence Unit, of the Bureau of Internal Revenue; and (5) Bureau of Customs. *Special agents* deal with criminals and underworld characters by taking part in raids, shadowing suspected persons and premises, and dealing with illegal activities concerned with counterfeiting, forging government checks, narcotics, and contraband. *Inspectors* look after violations of the law that are not considered criminal in nature, such as inspecting purchases of the Government to find if the goods conform to contracts. These GS-7 jobs are for men only (ages 23 to 40) and require 2 years experience in law, pharmacy, or general investigation (pay \$4205 per year).

#### **Federal Bureau of Investigation (FBI).**

The FBI is a separate agency under the Department of Justice with 51 field divisions throughout the

United States. With certain exceptions, the FBI has general charge of the investigation of offenses against the laws of the United States, collects and classifies identification records (fingerprints), and conducts the operation of the FBI National Academy. The director is J. Edgar Hoover. Opportunities for employment in the FBI include: special agent, clerical positions, fingerprint classifiers, and laboratory positions.

*Special agents.* The special agent in the FBI is an investigator, or "G-man," 25 to 40 years of age, and willing to serve anywhere. He must pass a rigid physical examination and be a graduate of an accredited school of either law or accounting. Special examinations—not under Civil Service—are required. Such agents investigate bankruptcy frauds, National Bank Act violations, kidnappings, bank robberies, and violations of the espionage and sabotage laws.

*Clerical positions.* The FBI employs both men and women in clerical work. Examinations are held at the Bureau's field offices (not under Civil Service) for high school graduates between the ages of 18 and 35 years. A *stenographer* (\$2950 per year) must be able to take dictation at 120 words per minute and type at 45 words per minute. A *typist* (\$2750 per year) must be able to type at 45 words per minute. A *translator clerk* (\$3175 per year) must be thoroughly qualified in at least one foreign language.



*Fingerprint classifiers.* Those employed as fingerprint classifiers work in Washington, D. C., in the Identification Division, with more than 106 million fingerprints on file. The Division serves as a central clearing house for records pertaining to criminals. Classifiers examine, classify, and file fingerprint record cards. Vacancies are filled from the staff of clerical employees who have demonstrated fitness—either men or women. The Division trains its own fingerprint specialists.

*Laboratory positions.* Other specialists examine handwriting and typewriting; analyze unusual type of evidence (soil, clay, dust, paint); examine bullets from suspected weapons; solve ciphers and cryptograms; and work in other highly specialized fields.

**The Postal Service.** The Government has a monopoly on the delivery of mail. There are no similar jobs in industry. In 1672 a monthly post was organized between New York and Boston, a 225-mile stretch. The old Boston Post Road is still in use, and now is an automobile highway known as Route No. 1. Over this highway the old New England post-route riders, on horseback, maintained regular mail service.

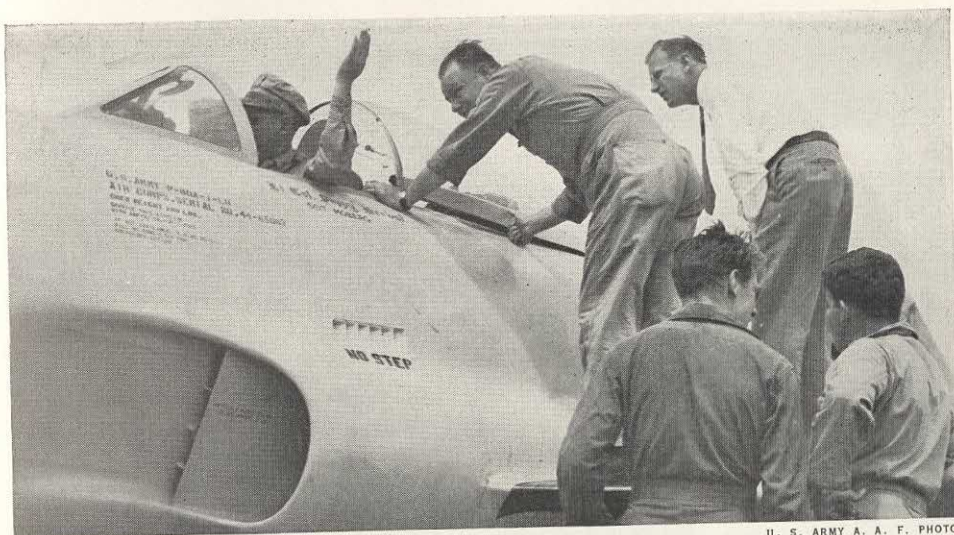
As fast as new types of rapid transportation developed, the Postal Service provided for carrying the mail on trains, automobiles, and airplanes. In 1939, the Autogiro Airmail Service—a 5-minute trip of 6 miles from the roof of the post office to the air-

port—was established in Philadelphia, making the shortest airmail route in existence. On June 22, 1946, the first airmail ever flown by a jet-propelled plane reached Washington, D. C., from Schenectady, New York. The *Shooting Star*, a P-80 plane, made the 321-mile trip in 49 minutes at a speed of 460 miles an hour.

The Postal Service maintains a huge motor fleet of thousands of vehicles, and uses every other known means of transportation, including horses and dog sleds. It comprises our largest savings bank, our largest business, our largest system for the transfer of money, and our largest agency available to the people for the investment of their savings in U. S. Government bonds. More than half a million miles of post routes, not including rural delivery routes, cross our country.

*Employment opportunities.* In 1953, 40,845 post offices employed workers in the Postal Service. Post offices are classified according to the amount of office receipts into four classes: *first-class*, the largest post offices, numbering 3001; *second-class*, with 6157; *third-class*, with 13,082; and *fourth-class*, with 18,605 and including post offices maintained in the rural villages, often as part of a general store.

Post-office employees, numbering half a million, are selected for the most part through the Civil Service Commission. A person seeking appointment must first pass an exami-



U. S. ARMY A. A. F. PHOTO

The first air mail ever flown in a jet-propelled plane was carried by the *Shooting Star* on June 22, 1946. Here the pilot of the *Shooting Star* is working with the ground crew and jet-engine experts to make sure that the engine will perform properly.

nation, held whenever the list of eligibles is low. Appointments are made from among those making the highest grades. Information as to when or where examinations are given, requirements, etc., may be obtained from the local postmaster. A few of the opportunities in the Postal Service are briefly described below.

*Postmaster.* The postmaster is in charge of the local post office. In first-class offices, his duties are administrative in nature. In the small fourth-class offices postmasters, many of whom are women, must provide quarters for handling the mail. Since 1938, all postmasters—except those in fourth-class offices—are appointed through Civil Service. The U. S. Postal Guide, available in libraries and post offices, gives information

concerning postmasters and their salaries.

*City letter carrier, regular (1-28).* The man who delivers the mail at the front door needs little description. In the post office, he sorts the mail in distributing boxes for his route and notes changed addresses. He furnishes his own uniform, cap, and badge and is bonded at his own expense. He works 40 hours in a 5-day week, walking most of the time in all sorts of weather. Men chosen for this work are between 18 and 45 years of age, at least 5 feet 4 inches tall, and weigh at least 125 pounds. About 88,800 men are so employed. Salaries (1951) of regular letter carriers begin at \$2870.

*Substitute letter carrier.* Regular carriers usually begin as substitutes at \$1.61½ an hour. Substitute letter





**Railway-mail clerks (1-27)** sort and classify mail in a railway mail car. They are in government service.

carriers are needed when regular carriers are ill or on vacation, or during a holiday rush period.

*Postal clerk (1-27).* Postal clerks not only do a certain amount of clerical work and wait on customers but also handle the incoming and outgoing mail. Women who apply for such appointments must be at least 5 feet tall. In third-class post offices, the local postmasters appoint postal clerks who begin at \$2770; substitute carriers receive \$1.35½ an hour. About 138,258 postal clerks are under Civil Service. Examinations, qualifications, and salary for a postal

clerk in a first-class or second-class post office are the same as for a city letter carrier.

*Rural carrier (1-28).* The rural carrier usually rides in his own automobile because distances from house to house in the country are too far to walk. For the use of his automobile, he is allowed 9 cents per mile. Standard routes are 30 miles in length, and his pay depends upon the number of miles a day that he travels on his route. On a standard 30-mile route the beginning salary is \$3158 per year; in Massachusetts the shortest route of 6 miles pays

\$1766 per year; and in Texas the longest route of 102 miles pays \$4598 per year.

**Sciences.** Men and women trained as astronomers, chemists, geologists, meteorologists, and physicists work in the laboratories of such agencies as the National Bureau of Standards, Food and Drug Administration, Bureau of Plant Industry, Bureau of Soils, Bureau of Agricultural Engineering, Weather Bureau, Geological Survey, Bureau of Mines, and the National Department of Defense.

**Transportation.** When transportation routes cross state lines, as most railroads and bus routes do, the laws regarding them are under the jurisdiction of the United States Government. These laws are enforced through the Interstate Commerce Commission where workers in railroading, shipping, and motor and water transportation study fares, schedules, rates, safety, and equipment. It takes many government workers to handle these transportation matters.

### For Discussion

1. What kinds of jobs are open in government service?
2. Discuss the meaning of Civil Service.
3. How does a person enter government service?
4. What is meant by assembled and unassembled examinations in Civil Service?
5. What are the two main schedules of positions in the Federal Government as of 1949?
6. What is the minimum pay for a person in (a) GS-1 and (b) CPC-1?
7. What are two important factors in qualifying for the higher service grades?
8. How does a person get into foreign service?
9. Mention the local employment opportunities in the Postal Service.
10. Discuss briefly the FBI.
11. How does one get a job as a fingerprint classifier?

### What to Read

Civil Service Announcements of Examinations. (Ask for announcements of current examinations.) U.S. Civil Service Commission, Washington 25, D.C. (Free)





COURTESY U. S. COAST AND GEODETIC SURVEY

**A tide-predicting-machine operator (0-50)**, employed in the U. S. Coast and Geodetic Survey at Washington, D. C., checks the ocean tides which ebb and flow twice each day.

*Congress at Work*, Stephen K. Bailey and Howard D. Samuel. Henry Holt and Company, Inc., New York, 1952. 502 p.

*Federal White-Collar Workers; Their Occupations and Salaries, June 1951*. Bureau of Labor Statistics Bulletin 1117. U.S. Government Printing Office, Washington 25, D.C., 1953. 43 p. (15 cents)

*Government Jobs and How to Get Them*, Sterling D. Spero, editor. J. B. Lippincott Company, Philadelphia, 1945. 358 p.

*History of the Federal Civil Service*, M. Barris Taylor. U.S. Government Printing Office, Washington 25, D.C., 1941. 162 p. (25 cents)

*Living in the Peoples' World*, Lawrence V. Roth, Stillman M. Hobbs, and Walter J. Greenleaf. Laidlaw Brothers, Inc., New York, 1949. 767 p.

*Opportunities in the Merchant Marine*, John J. O'Connor, Jr. Vocational Guidance Manuals, Inc., New York, 1953. 160 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern work in the government.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Tell about the art galleries in Washington, D. C., that are supported by government funds.
BUSINESS:	How are clerical workers selected for government employment?
ENGLISH:	Discuss the <i>Style Manual</i> of the U. S. Government Printing Office. Why are these rules of English necessary in government publications?
HEALTH:	Find out the duties of the U. S. Public Health Service.
HOME ECONOMICS:	What agencies in the Federal Government employ trained home economists? Which agencies are managed largely by and for women?
LANGUAGES:	What government departments have most need for language specialists?
MATHEMATICS:	Explain the duties of mathematicians and statisticians employed in government service.
MUSIC:	Discuss the Army, Navy, and Marine bands as government agencies.
OCCUPATIONS:	Tell how the selection of workers for government employment differs from the selection of workers in private industry. Why is this necessary?
SCIENCE:	What does the U. S. Bureau of Standards do? What kinds of scientists are employed in this bureau?
SHOPWORK:	What well-known government shops require skilled craftsmen?
SOCIAL STUDIES:	Compare the "spoils system" and the "merit system" of government employment. Discuss the U. S. Civil Service Commission.



*Our American Government*, Wright Patman. Ziff-Davis Publishing Company, Chicago, 1948. 143 p.

*Students and the Armed Forces*. U.S. Government Printing Office, Washington 25, D.C., 1952. 88 p. (45 cents)

*This Way to a Job in Government*. U.S. Civil Service Commission Pamphlet No. 47. U.S. Government Printing Office, Washington 25, D.C., 1953. 6 p. (5 cents)

*United States Army Occupational Handbook; a Manual for Civilian Guidance Counselors and Students*. Office of the Adjutant General, Department of the Army, Washington 25, D.C., 1952. 194 p. (Free to schools)

*The U. S. Foreign Service; a Career for Young Americans*. Department of State. U.S. Government Printing Office, Washington 25, D.C., 1952. 23 p. (15 cents)

# CHAPTER 25 INDUSTRIES—AN OVERVIEW

By the term "industries" we mean all trade, businesses, or groups of establishments in which individuals are gainfully employed. Industries are often identified on the basis of the product made—the automobile industry—or the kind of service rendered—the hotel industry.

Industries are groups of similar "establishments," each of which includes hundreds of people in different occupations. An establishment—factory, mill, store, mine, or farm—is a single location where business is conducted or where industrial occupations are carried on.

## INDUSTRY IN THE UNITED STATES

**Industrial production.** The number of industries in the United States has increased at a rapid rate, but the value of industrial products has increased many times faster. This fact alone reveals the importance of our industries, through the increased efficiency of machines, as great producers of wealth in our country.

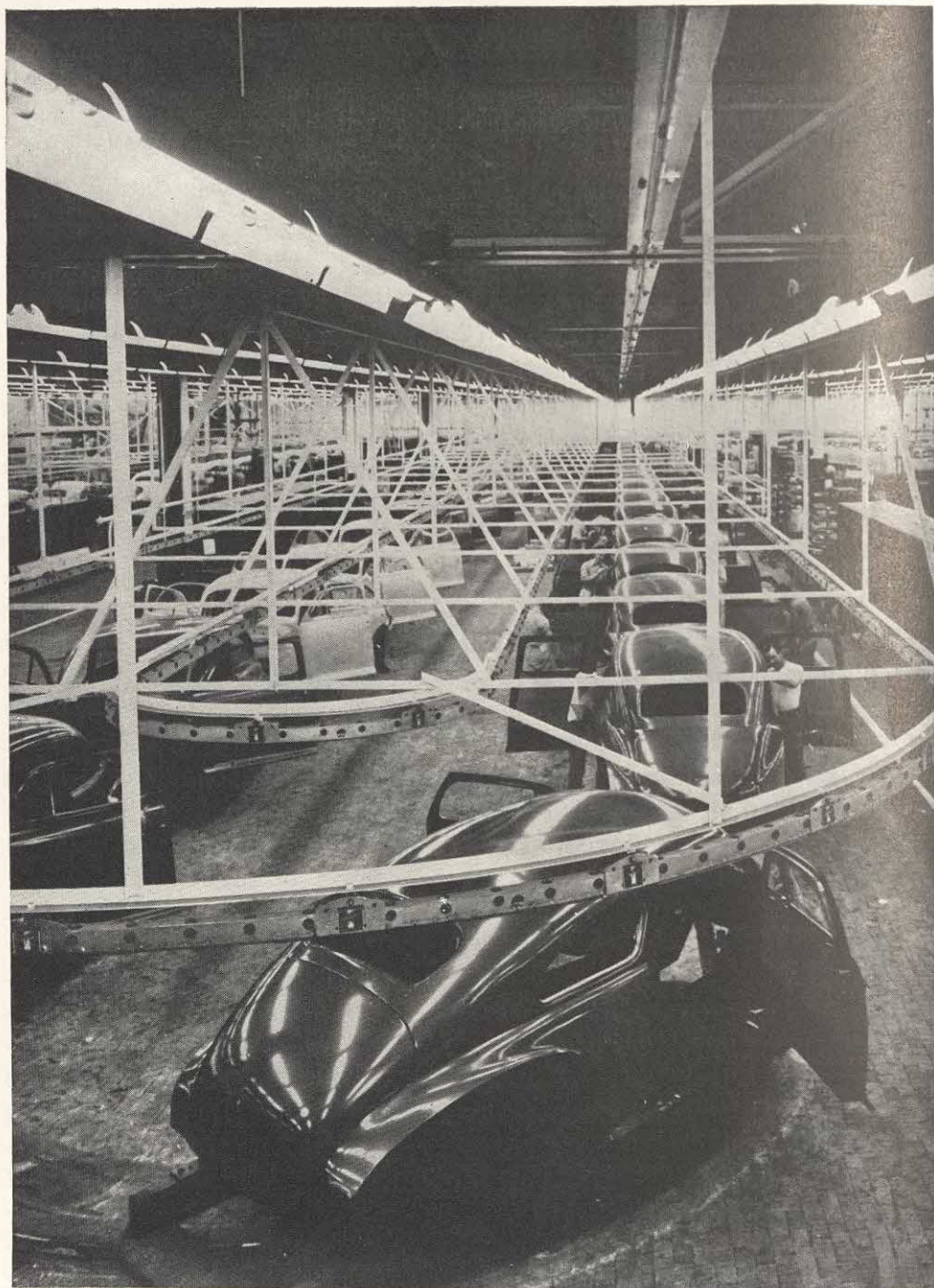
The Bureau of the Census for years gathered data periodically through 1939 on manufactures—

that is, data on industries and their products. The work of collecting data was abandoned during the years of World War II, but in 1948 it was again resumed to cover the year 1947. (See table on page 407.)

In 1947 there were 240,881 factories, and of these two-thirds were small plants employing fewer than 20 wage earners each. Only 4160 (2 percent) of all factories employ more than 500 wage earners each, and of these only 500 employ more than 2500 workers each. Very few of the larger plants in this country are million-dollar businesses, yet the biggest plants employ more than half of the wage earners in manufacturing and produce more than two-thirds of the entire value of manufactured products. The count of establishments, therefore, has little significance in manufacturing unless the size of industries is taken into consideration. The major part of all manufacturing is carried on by the big corporations whose names are very familiar to the general public because their products are well advertised.

The 10 most important states in terms of "value added by manufac-





COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

By our production methods, automobile plants in our country have been able to produce over a hundred million motor vehicles, while all the other nations of the world together have produced only one quarter of that number.

ture" ranked as follows: (1) New York, (2) Pennsylvania, (3) Illinois, (4) Ohio, (5) Michigan, (6) New Jersey, (7) California, (8) Massachusetts, (9) Indiana, and (10) Wisconsin. Manufacturing plants buy raw ma-

terials and partly finished supplies for making products for shipment and sale. The "value added by manufacture" is the amount by which the value of shipments is greater than the cost of the materials. For

### CENSUS OF MANUFACTURES <sup>1</sup>

Major Industry Groups	Workers Employed		Establishments	
	Number	Percent	Total Number	Number with 1000 or More Workers
Machinery (except electrical)	1,545,000	11	17,906	290
Food and kindred products	1,441,000	10	39,933	107
Textile-mill products	1,233,000	9	8,185	209
Transportation equipment	1,181,000	8	3,711	258
Primary metal products	1,157,000	8	5,363	228
Apparel and related products	1,082,000	8	30,960	26
Fabricated metal products	971,000	7	16,734	116
Electrical machinery	801,000	6	3,973	162
Printing and publishing	715,000	5	28,986	82
Lumber and products (except furniture)	635,000	4	26,231	14
Chemicals and allied products	632,000	4	10,073	94
Stone, clay, and glass products	462,000	3	11,650	61
Paper and allied products	450,000	3	4,103	37
Leather and leather products	383,000	3	5,308	18
Furniture and fixtures	322,000	2	7,687	22
Rubber products	259,000	2	875	56
Instruments and related products	232,000	2	2,599	50
Petroleum and coal products	212,000	1	1,387	37
Tobacco manufactures	112,000	1	1,086	21
Miscellaneous manufactures	464,000	3	14,131	47
Totals	14,294,304	100	240,881	1,935

**This table should be read as follows:** 11 percent of all workers employed in manufacturing industries (1,545,000 workers) are employed in industries that manufacture machinery. There are 17,906 of these industries, but only 290 that employ 1000 or more workers.

<sup>1</sup> These data for the year 1947 were released August 1, 1949, and are the first data from the Census of Manufactures since 1939.





COURTESY U. S. DEPT. OF LABOR

The acres of cars in the parking space outside any large industrial plant are an impressive indication of the great number of workers employed in the plant.

example, a finished sweater is much more valuable than the yarn that goes into it. The difference between the cost of the yarn and the price of the finished sweater is the value added by manufacture.

**Industrial areas.** Some regions of the United States are more important industrially than others. Just as some regions are chiefly agricultural, others are noted for their industries and manufacturing. Such industrial centers are known as "labor-market areas" because jobs and workers are exchangeable. A labor-market area has at its center an important city

and its environs, which may also include other cities nearby.

The Bureau of Employment Security, in the U. S. Department of Labor, makes regular reports on the employment situation in the largest industrial areas, especially those areas with a population of more than 200,000. There are 151 such areas which represent our largest cities and their environs—for example, the Boston area, the New York area, the Chicago area, and the Los Angeles area. When necessary, data are also gathered from smaller areas with a population of as few as 75,000.





COURTESY INTERNATIONAL LADIES' GARMENT WORKERS' UNION

Most of the workers employed in the garment industry work in New York City. The New York area is the largest industrial and manufacturing center of all the "labor-market areas."



In these areas the unemployment situation fluctuates and is never the same, but it is reported each month in the Bureau of Employment Security's *The Labor Market and Employment Security*, a monthly publication of the U. S. Department of Labor. In the March 1951 issue the 151 major labor-market areas were grouped into eight regions, and the unemployment situation was shown for each region. These data are summarized in the table below. Current data, meanwhile, are constantly being published.

**Industrial divisions.** All industries in this country can be grouped into 10 large industry divisions, as shown on page 411, according to the Stand-

ard Industrial Classification of 1949.

Each of these large divisions is subdivided into many separate units—for example:

*Division 1, Agriculture, forestry, and fishing industries*, employs nearly one-fifth of the working population and includes farms, agricultural and similar service establishments, forestry, and fisheries.

*Division 4, Manufacturing*—the largest industry division—employs nearly one-fourth of the working population and is divided into 21 groups including such industries as foods and kindred products; textile manufactures; apparel and other finished products made from fabrics; furniture and fixtures; printing,

#### MAJOR LABOR-MARKET AREAS BY REGION AND UNEMPLOYMENT <sup>2</sup>

Region	Total Areas	Areas by Percentage of Unemployment			
		Under 3%	3-4.9%	5-6.9%	7-11.9%
New England	17	5	6	3	3
Middle Atlantic	24	4	13	3	4
East North Central	31	13	13	5	0
West North Central	13	4	6	1	2
South Atlantic	25	7	11	4	3
South Central	25	4	13	7	1
West	15	1	6	6	2
Territory of Hawaii	1	0	0	0	1
Totals	151	38	68	29	16

This table should be read as follows: New England has 17 major labor-market areas. In 5 of these areas unemployed persons represented less than 3 percent of the labor force. In 6 areas 3 to 4.9 percent of the workers were unemployed. In 3 areas 5 to 6.9 percent were unemployed. In 3 areas from 7 to 11.9 percent were unemployed.

<sup>2</sup> From *The Labor Market and Employment Security*, U.S. Dept. of Labor, March 1951.

publishing, and allied industries; products of petroleum and coal; rubber products.

*Division 6, Wholesale and retail trade*, employs one-sixth of the working population and is divided into merchant wholesalers and retailers who deal with lumber, general merchandise, food, automobiles, apparel, and furniture.

*Division 8, Service industries*, is of special interest to women because more than two-fifths of the women who earn a living—especially in personal services and educational services—are employed in this division.

The remaining groups of industries each employ from 2 to 7 percent of the working population.

**Opportunities in industry.** Industry employs all kinds of workers, from those without skills, who do the labor work, to those professionally trained, who do administrative work, planning, and research.

*Unskilled workers*, of course, are assigned tasks inside or outside a plant under the direction of a super-

visor. Such work may involve heavy physical labor or it may consist of light work indoors.

*Semiskilled workers* do routine work on machines and aid in the work of processing materials. Many of these workers enter employment as unskilled workers and learn some particular semiskilled work on the job.

*Skilled workers* know how to handle valuable products and materials. They use and take care of the plant's machines and tools. In any industry these craftsmen are the highly skilled artisans who hold such jobs as *bakers* in the food industry, *tailors* in the manufacture of garments, *upholsterers* in the manufacture of furniture, *lithographers* in the printing trades, or *silversmiths* in metalworking concerns. The craftsmen become the foremen who supervise the work of others and sometimes work their way up to executive positions. Such craftsmen and other skilled workers usually enter industry through apprenticeship, supplemented by train-

## DIVISIONS OF INDUSTRY IN THE UNITED STATES

1. Agriculture, forestry, and fishing
2. Mining
3. Contract construction
4. Manufacturing
5. Transportation, communications, and other public utilities
6. Wholesale and retail trade
7. Finance, insurance, and real estate
8. Service industries
9. Government
10. Establishments not elsewhere classified (n.e.c.)



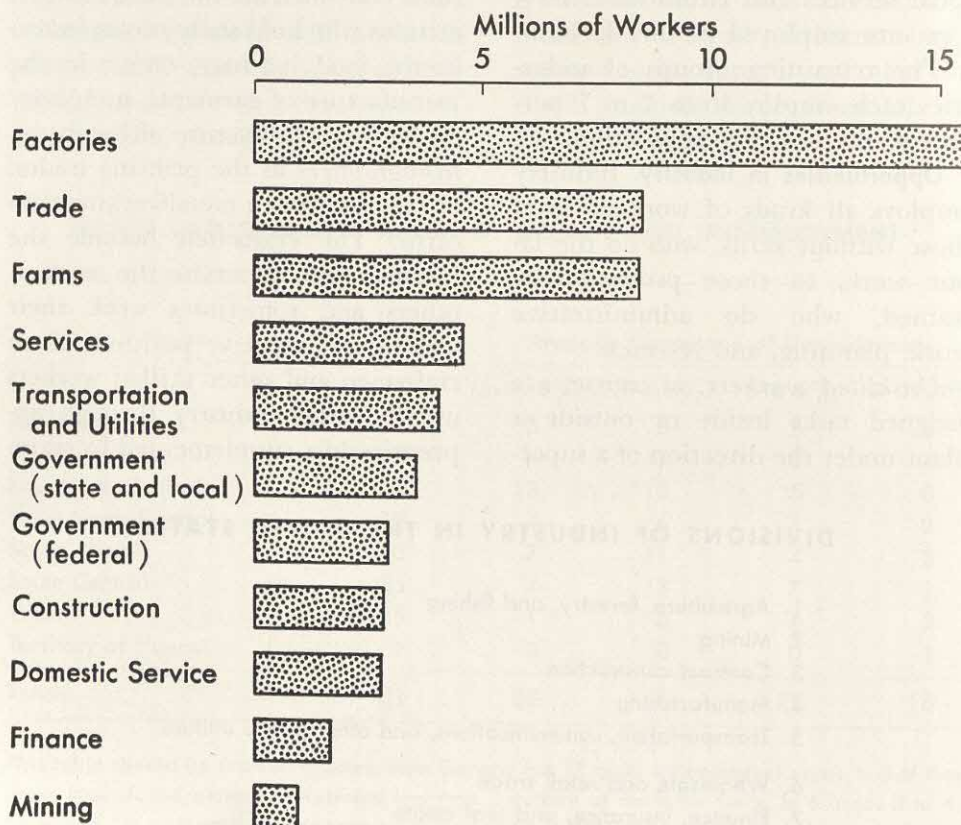
ing in certain vocational schools.

*Professional workers* make the policies, study the profits, and manage the business. Usually they have learned through experience, or at college, lessons in business management. They have gained a background in finance, economics, labor problems, management, and industrial relations. Or they may have specialized in engineering, design, or special branches of science. Some are

employed in offices as *accountants, statisticians, draftsmen, and lawyers*, or in plant laboratories as *researchers*. College-trained men and women usually seek employment leading to some professional or administrative work in the sales, financial, or production departments.

It is likely that there is a large or small industrial plant located in or near your community. A visit to such a plant will help you to under-

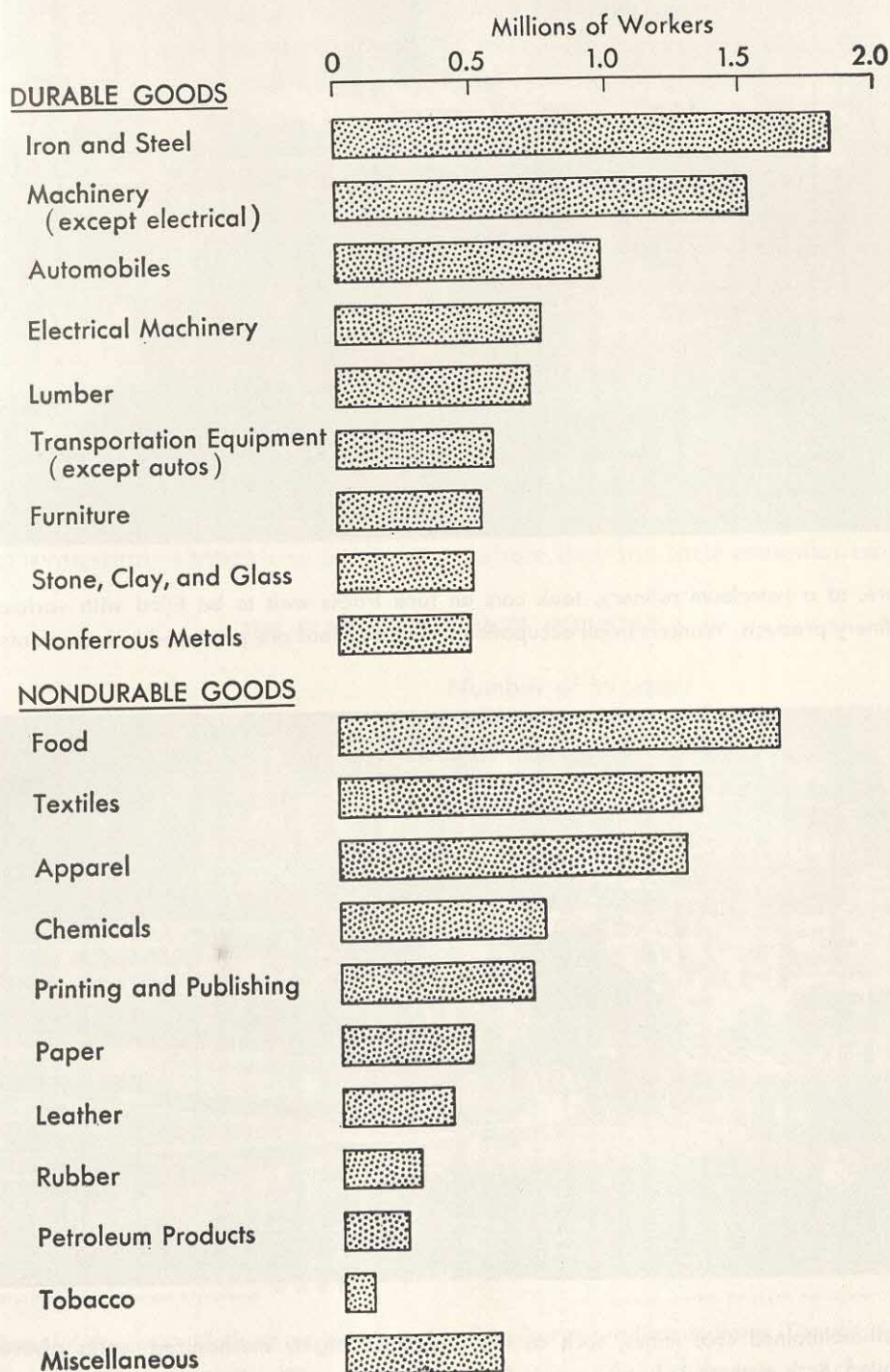
### MAJOR INDUSTRIES



SOURCE: 1947 CENSUS DATA

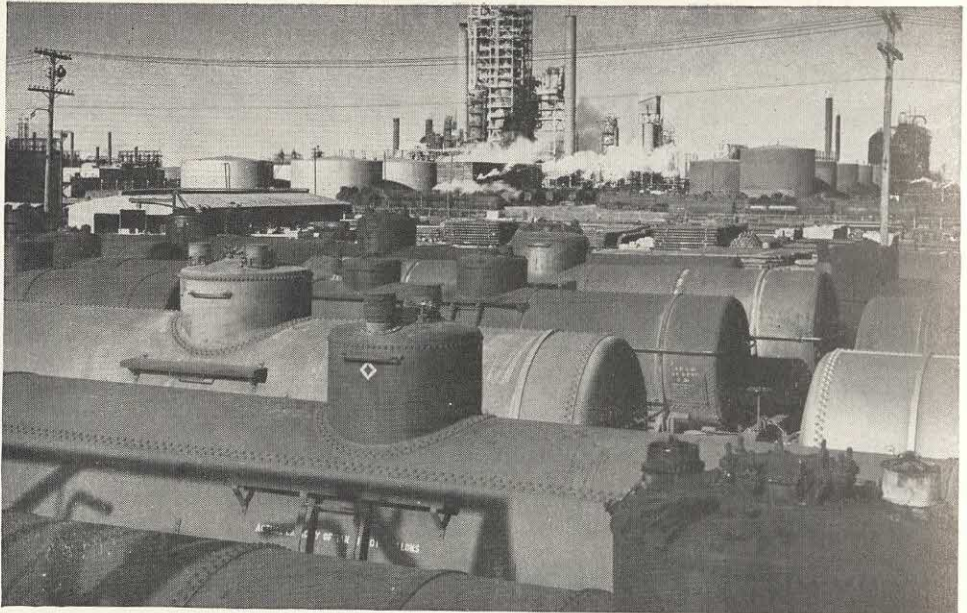
More men and women work in factories than in any other single industrial establishment. These figures are for employees only.

## MAJOR MANUFACTURING INDUSTRIES



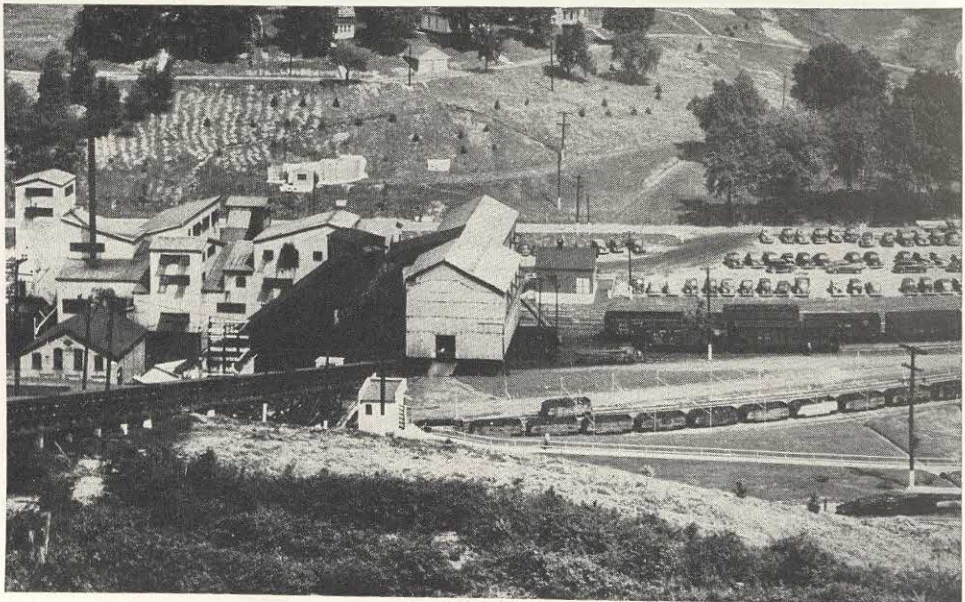
SOURCE: 1947 CENSUS DATA





COURTESY STANDARD OIL CO. (N. J.)

Here, at a petroleum refinery, tank cars on tank tracks wait to be filled with various refinery products. Workers in all occupational classifications are employed in such plants.



COURTESY BITUMINOUS COAL INSTITUTE

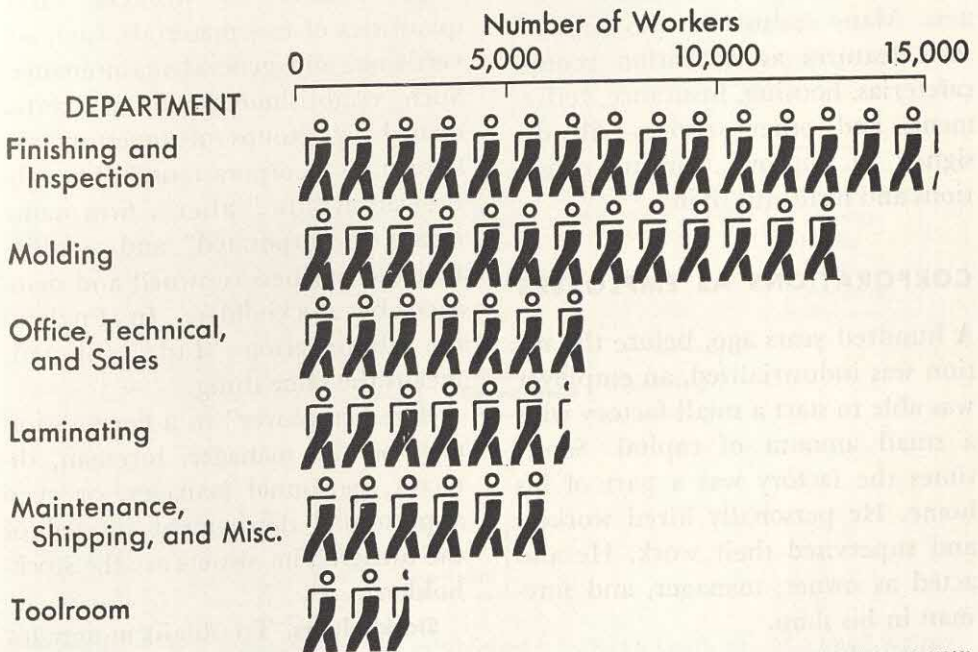
Well-maintained coal mines, such as this one, have highly mechanized works above ground. Both of these industries are in Division 2—Mining. (See list on page 411.)

stand better how industry is organized, what workers do, and how they are chosen. A visitor might study carefully such factors as these: (1) why the plant is located where it is; (2) what products are made; (3) whether or not the working conditions are satisfactory; (4) what the hours of work are; (5) what wages beginners earn; and (6) what attention has been given to the health, safety, comfort, and welfare of employees. People in the personnel department or the plant employment office, representing the "employer," are generally glad to answer a visitor's questions about these items, as

well as questions about kinds of workers employed, qualifications for jobs, and employment opportunities.

The personnel department is the place where workers are selected and placed on plant jobs. Often *psychologists* are employed in such departments in large industries to analyze plant jobs, give tests to applicants for work, and select new workers. In order to avoid large labor turnover, employers know that they must select workers carefully and train them to do efficient work at jobs within their ability and interests. Some workers prefer routine jobs where they use little muscular effort

### THE PLASTICS-PRODUCTS INDUSTRY



SOURCE: BUREAU OF LABOR STATISTICS (1946)

Some of the many kinds of workers found in the plastics-products industry (Division 4—Manufacturing) are shown here.



but operate machines that turn out quantities of products. Others like to work with their nimble fingers but cannot operate machines. Others need to work in quiet surroundings, and those with high mental ability often prefer jobs that require keen judgment and quick decisions.

The personnel departments of modern industries usually assume responsibility for the well-being of the workers in a number of ways. Workers are taught to use safety devices—goggles, gloves, protective garments—to prevent accidents. They are also trained and taught preventive measures so as to avoid accidents and occupational diseases. A medical staff may take care of workers who suffer from fatigue, accident, or sickness. Many industries also provide such features as recreation rooms, cafeterias, housing, insurance, retirement, and other services—all designed to improve working conditions and healthful living.

### **CORPORATIONS AS EMPLOYERS**

A hundred years ago, before the nation was industrialized, an employer was able to start a small factory with a small amount of capital. Sometimes the factory was a part of his home. He personally hired workers and supervised their work. He also acted as owner, manager, and foreman in his shop.

But industries grew to such an extent that the personal element between employer and workers became

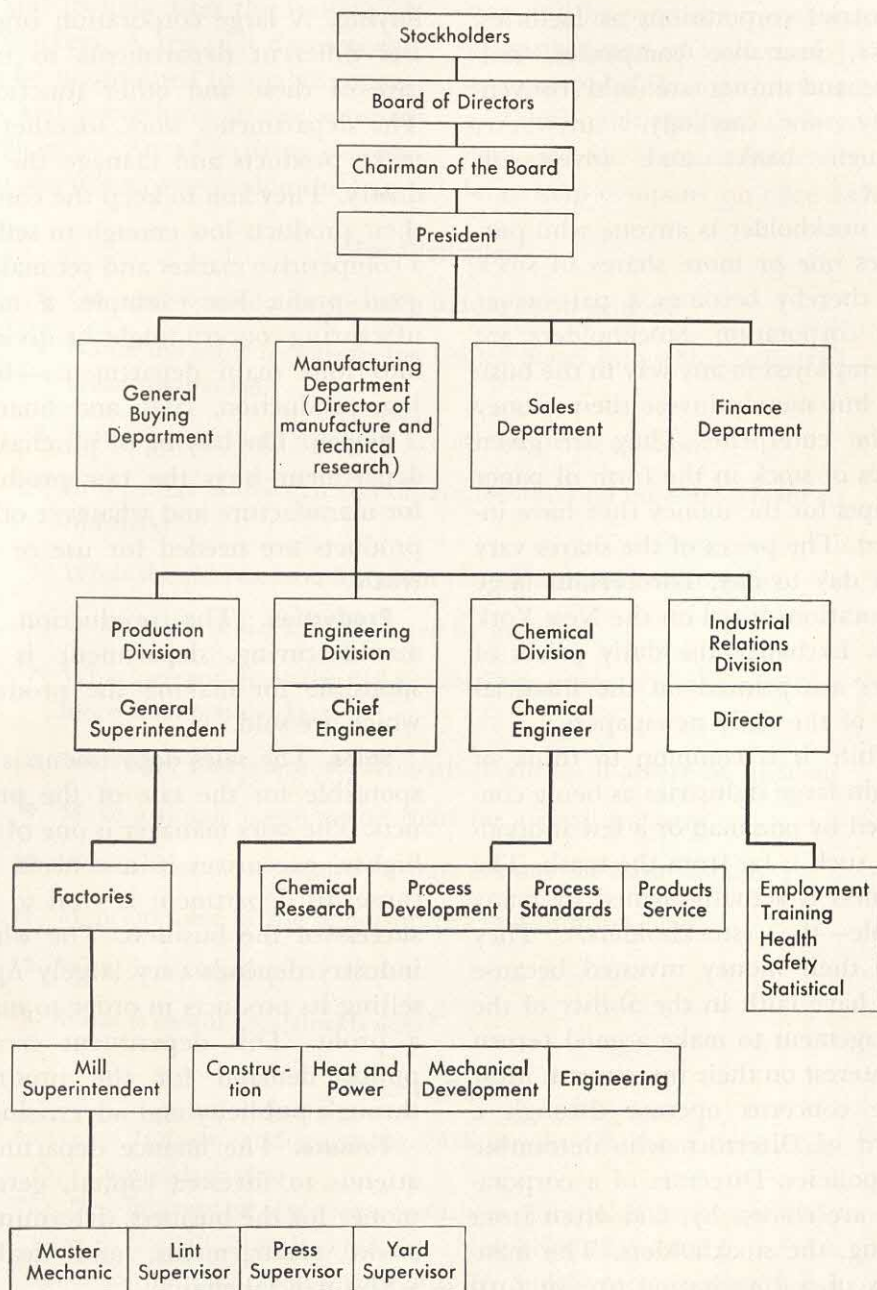
lost. Large-scale industry had to provide many departments and department heads to take care of the many workers needed for the increased volume of business. Although we sometimes still think of the employer as one man, actually industries are now corporations owned and managed by many individuals.

**Organization of a corporation.** To-day it takes a great deal of money to start and maintain an industrial establishment or plant. Seldom can one individual supply enough capital to maintain operations in a competitive industry. For this reason a group of individuals usually bear the expense jointly. Their expenses involve costly machines, pay rolls for large numbers of workers, large quantities of raw materials, fuel, advertising, and general maintenance. Such establishments, or concerns, owned by groups of investors are known as "corporations." The abbreviation "Inc." after a firm name means "incorporated" and signifies that the business is owned and managed by stockholders. In England the abbreviation "Ltd." (limited) means the same thing.

The "employer" in a corporation may be the manager, foreman, director, personnel manager, or even a personnel department instead of the owner. The owners are the stockholders.

**Stockholders.** To obtain money for running the business, a corporation issues shares of stock, which are put up for sale. Shares of stock for such

## ORGANIZATION OF A LARGE SOAP COMPANY



The soap company outlined here was established a hundred years ago as a small factory. It is now a large corporation, operating a dozen factories, twice as many branches, and more than a dozen cottonseed-oil mills. More than 10,000 workers are on the pay rolls.



industrial corporations as factories, banks, insurance companies, railways, and mines are sold conveniently to anybody, anywhere, through banks and investment houses.

A stockholder is anyone who purchases one or more shares of stock and thereby becomes a part-owner of a corporation. Stockholders are not employed in any way in the business but merely invest their money in the enterprise. They are given shares of stock in the form of paper receipts for the money they have invested. The prices of the shares vary from day to day. For certain large corporations listed on the New York Stock Exchange the daily prices of shares are printed on the financial page of the daily newspapers.

While it is common to think of certain large industries as being controlled by one man or a few individuals, such is far from the truth. The business is actually owned by many people—the stockholders. They keep their money invested because they have faith in the ability of the management to make a good return in interest on their investment. Most large concerns operate through a Board of Directors, who determine the policies. Directors of a corporation are chosen by, and often from among, the stockholders. The managers of a corporation are in turn chosen by the Board of Directors.

**Management.** In any industry, four important functions stand out—managing, producing, selling, and

buying. A large corporation organizes different departments to take care of these and other functions. The departments work together to make products and manage the industry. They aim to keep the cost of their products low enough to sell in a competitive market and yet make a good profit. For example, a manufacturing concern might be divided into four main departments—buying, production, sales, and finance.

**Buying.** The buying or purchasing department buys the raw products for manufacture and whatever other products are needed for use or for resale.

**Production.** The production, or manufacturing, department is responsible for making the products which are sold.

**Sales.** The sales department is responsible for the sale of the products. The sales manager is one of the highest executives in a concern because his department is vital to the success of the business. The whole industry depends very largely upon selling its products in order to make a profit. This department creates public demand for the products through publicity and advertising.

**Finance.** The finance department attends to invested capital, getting money for the business, determining credit arrangements, and dealing with financial affairs.

Other departments are also provided. These might include a personnel department to select the most efficient workers from those who ap-

ply and to look after the welfare of the workers. A research department may be maintained to analyze materials and procedures in the interest of efficiency. An advertising department attends to advertising the busi-

ness and its products in newspapers, magazines, and on radio and TV. As an example of the many departments and their relationships in a large concern, see the organization chart of a large soap company on page 417.

### For Discussion

1. On what basis do we identify industries in general?
2. Name the eight regions in the United States into which industrial areas are divided.
3. Into what 10 large divisions are all industries grouped?
4. From what source can you obtain information on employment in industry?
5. What should you look for when you visit an industrial plant?
6. What kinds of workers are hired by industry?
7. What percentage of the 240,881 factories in the United States hire more than 500 workers?
8. Into what four main departments might an industry be divided?
9. Make a simple organization chart for a small industry.
10. What three major industry groups employ the most workers?
11. Mention some of the opportunities that industry offers.
12. What is a corporation?
13. What is meant by a stockholder?

### What to Read

- American Industries Monographs.* (Ask for list.) Bellman Publishing Co., Cambridge, Mass.
- The Development of American Industries,* John G. Glover and William B. Cornell. Prentice-Hall, Inc., New York, 1946. 1005 p.
- Economics for Our Times,* Augustus H. Smith. McGraw-Hill Book Company, Inc., New York, 1953. 534 p.
- Economics in Our Democracy,* Albert H. Sayer, Charles Cogen, and Sidney Nanes. McGraw-Hill Book Company, Inc., New York, 1950, 677 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Show how industrial design affects our choice of automobiles, toasters, refrigerators, etc.
<b>BUSINESS:</b>	What kinds of clerical jobs are available in local industries?
<b>ENGLISH:</b>	Write a story of a worker in a local manufacturing plant, telling what he does, his qualifications, his preparation, requirements, etc.
<b>HEALTH:</b>	Tell about some of the safeguards that industries maintain to prevent accidents to workers on elevators, near machines, when washing windows, etc.
<b>HOME ECONOMICS:</b>	Bring to class magazine advertisements or empty box cartons that mention a home economics specialist employed to sponsor some industrial product—home equipment, cakes, breads, jellies, cereals, etc.
<b>LANGUAGES:</b>	Discuss the value of a foreign language to a salesman who sells products to consumers in other countries.
<b>MATHEMATICS:</b>	Bring to class the financial page of the newspaper and explain the stock-market situation for one selected industry—number of shares sold, opening and closing market prices, interest paid, etc.
<b>MUSIC:</b>	Considering that one sees so many different makes of pianos, how do you account for the fact that there are only 27 manufacturers of pianos according to the 1947 Census of Manufacturers?
<b>OCCUPATIONS:</b>	What local manufacturing plants provide opportunities for graduates of the local high school?
<b>SCIENCE:</b>	What raw materials do industries need for manufacturing soap? Demonstrate in the laboratory the manufacturing process by which soap is made.
<b>SHOPWORK:</b>	Report on shop conditions in local manufacturing plants—mentioning employment, opportunities, lay-offs, wages, equipment, etc.
<b>SOCIAL STUDIES:</b>	Tell about the improvement in manufacturing industries from the introduction of power machines to assembly-line production.

- The Economics of American Industry*, Evan B. Alderfer and H. E. Michl. McGraw-Hill Book Company, Inc., New York, 1950. 714 p.
- Employment Outlook in the Plastics Products Industry*. Bureau of Labor Statistics Bulletin 929. U.S. Government Printing Office, Washington 25, D.C., 1948. 20 p. (15 cents)
- Industries* (Industrial classification for counselors), Walter J. Greenleaf. U.S. Office of Education Misc. Publication No. 3321. Federal Security Agency, Washington 25, D.C., 1949. 8 p. (Free)
- Job Guide—A Handbook of Official Information About Employment Opportunities in Leading Industries*, Sydney H. Kasper, editor. Public Affairs Press, Washington, D.C., 1945. 193 p.
- Opportunities in Plastics*, Denis A. Dearle. Vocational Guidance Manuals, Inc., New York, 1953. 128 p.
- Our Industrial Age*, H. M. Boodish. McGraw-Hill Book Company, Inc., New York, 1949. 387 p.
- Our World of Work*, Seymour L. Wolfbein and Harold Goldstein. Science Research Associates, Chicago, 1951. 48 p.
- This Fascinating Lumber Business*, Stanley F. Horn. Bobbs-Merrill Company, Indianapolis, Ind., 1943. 328 p.



# CHAPTER 26 THE AUTOMOBILE INDUSTRY

In the United States there is a car for every 4.4 persons, compared with one for every 24 persons in Britain, one for every 42 persons in France, and one for every 294 persons in Russia. Approximately 44 million motor vehicles are in use in this country—36 million passenger cars, 8 million trucks, and 200,000 busses.

Americans continue to buy and use motor vehicles at a greater rate than ever before. Employment in the automobile industry, therefore, continues to rise because jobs are created through production, sales, servicing, and commercial use of motor vehicles.

**Extent of the automobile industry.** In 1901 the Olds Motor Works turned out 400 cars. In 1908 the Ford Motor Company (founded in 1903) manufactured 10,000 cars. Today 56 firms represent the automobile industry and produce 5 million motor vehicles a year, or 80 percent of the world's automobiles. The 56 firms build 20 different makes of passenger cars, 39 makes of trucks, and 20 makes of busses. In August 1949 a new all-time high was reached in the manufacture of cars when 657,664

units, including 556,370 new passenger cars, were assembled.

The automobile industry involves so many other related industries that it is difficult to know where to draw the line to exclude related businesses. For example, the automobile industry uses or consumes 90 percent of all the gasoline used in this country, 80 percent of all the rubber, 75 percent of all the plate glass, and large quantities of other products of industries that are related to automobile manufacturing.

**Location of the automobile industry.** Michigan became an automobile center because such leaders of the industry as Henry Ford, Ransom E. Olds, David Buick, and others lived and established their businesses there. Michigan also provides extensive iron and copper mines and timber supplies. Automobile production grew up chiefly in Michigan, Ohio, and Indiana near the homes of the early leaders of the industry. However, construction of automobiles also includes the assembling in "parts plants" of various standard parts produced by independent foundries and factories. Every state, except Wyoming, has one or more



COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

The automobile industry employs about 75,000 women workers in various occupations involved in producing automobiles.

motor-vehicle and parts plants where the body and chassis of automobiles are put together.

**Numbers employed in the automobile industry.** Altogether there are 1904 motor-vehicle and parts plants in this country, employing 701,000 workers. Michigan leads with 362 plants and 377,000 employees. Not included in these figures are at least 250,000 additional workers in plants that make tires, automobile glass, and other parts essential in automotive manufacturing.

Directly or indirectly, the automobile industry employs 6 to 8 million workers either in (1) manufacturing, (2) repair and maintenance, or (3) operation. Probably 5 million work as truck drivers for private truck fleets and individual firms. A quar-

ter of a million operate busses or work for bus firms. Another million drive taxis, finance cars, refine petroleum, and provide raw materials for motor vehicles. A million and a half work at automotive sales and servicing jobs in local dealerships, accessories stores, repair garages, and gasoline stations. Still others work at road construction and maintenance of highways that carry automobile traffic.

**Competition among firms.** In this country firms must compete with rival firms to win and hold customers. In nations where the government controls industry, such competition is not necessary and customers have little choice among makes of cars. Competition tends to lower car costs and increase production, since the



customer—by his choice and purchases—determines the style, the make, the quantity, and the price of cars that different firms make. An automobile plant estimates future demand of cars by employing a *chief statistician* (0-36) and staff to make graphs based upon sales reports that come from the dealers every week or two.

New inventions also affect sales—one out of every six patents granted yearly in the United States concerns automotive inventions. Automotive patents number about 5500 a year and expire after 17 years. Most of the 400,000 automotive patents issued since 1896 are now free for anyone to use.

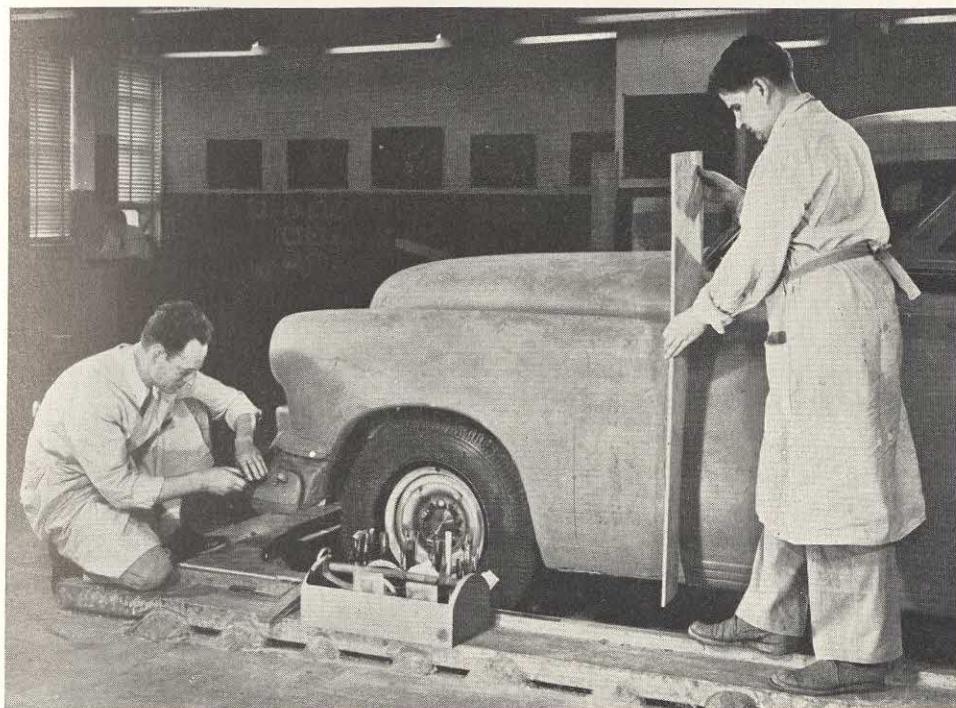
Superior manufacturing machinery also results from competition. With such machines, plant workers earn from 3 to 10 times the real wages of similar workers in Europe, yet standard cars in this country cost only half or two-thirds as much as similar cars manufactured abroad.

**Marketing of cars.** Although the production of automobiles is centralized in several states, the marketing of automobiles is one of the most extensive systems of distribution ever established. Marketing cars is a nation-wide enterprise with distribution in the hands of dealers. The *dealer* is in business for himself. He buys factory cars for cash and has the exclusive right to his sales territory. He does not give customers credit but refers such customers to the established automobile finance compa-

nies. In or near your community you will find dealers ready to sell motor vehicles of all types.

The sale of cars may be estimated from the registration of new cars. In 1948 new passenger cars registered in the United States numbered 4,526,126. One-half of these cars were sold in the following eight states: New York (401,000 cars sold), California (336,000), Pennsylvania (318,000), Illinois (294,000), Michigan (290,000), Ohio (268,000), Texas (236,000), and New Jersey (142,000).

**Mass-production methods.** More than 15,000 parts go into an automobile. Each of these parts must be especially designed to fit and so standardized as to size and shape that they fit into place without previous trial. These parts, made on heavy machines, are assembled either by hand or by machines. Some factories manufacture parts only, to be shipped to assembly plants throughout the country. Thus the production of an automobile involves these steps: (1) making the raw materials into parts; (2) combining the parts to make several primary units, such as motor, radiator, dash, frame, body, gas tank, front and rear axles; and (3) assembling the units to make a complete car. This process is mass production—the keynote of automobile manufacture. In order to produce the best car possible in a short time and within a given price range, the industry is highly organized. Each worker does just a small bit of work over and over again on different



COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

**Sculptors (0-04)** in the automobile industry make models of cars in clay or wax. They work out their design problems from sketches and produce a full-size clay model of a car before it is manufactured.

units without waste of motion or energy. With heavy machines and presses, it takes less than a minute to turn out a finished part that once required long hours of skilled hand labor.

**Manufacturing automobiles.** Visitors to an automobile plant are amazed at the size of the parking space filled with workers' cars. Thousands are employed in the process of getting out cars. The manufacture of automobiles starts outside the plant and goes through many processes and assembly lines in the plant before the cars are ready for market.

*In the freight yard.* Men who work with *unloading crews* swarm about trains and trucks in the freight yards to unload materials and equipment. Cranes groan under their heavy loads. Tons of steel, thousands of castings, and carloads of frames flow into the factory yard. An endless line of finished items—wheels, tires, brakes, springs—swing away on conveyor lines.

*Within the plant.* Inside, *plant layout men* and *production experts* carefully map out every step in preparing a factory for a new car model, since expensive machines that may



have to be discarded or rebuilt are involved. Many experts offer their suggestions and criticisms—*production men, sales managers, purchasing agents, tool shop specialists, cost accountants, researchers, and stylists.*

A group of *artists* at their drawing boards first make sketches of automobile body lines. A *sculptor* reproduces the chosen design in clay. Changes are then made, and the design is finally perfected for production. First, a full-sized car model is built up in mahogany. This wooden model is then cut into sections, and plaster casts are made of each section ready for casting in metal.

*In the shop.* Men called *body engineers* use the models or patterns described to make castings and dies. In the die shop the model goes to an automatic machine. Here a moving needle, or stylus, feels every contour of the model and directs a heavy cutting tool. The tool grinds away the surface of a solid block of iron and duplicates every curve and line of the model to make a die for stamping out metal.

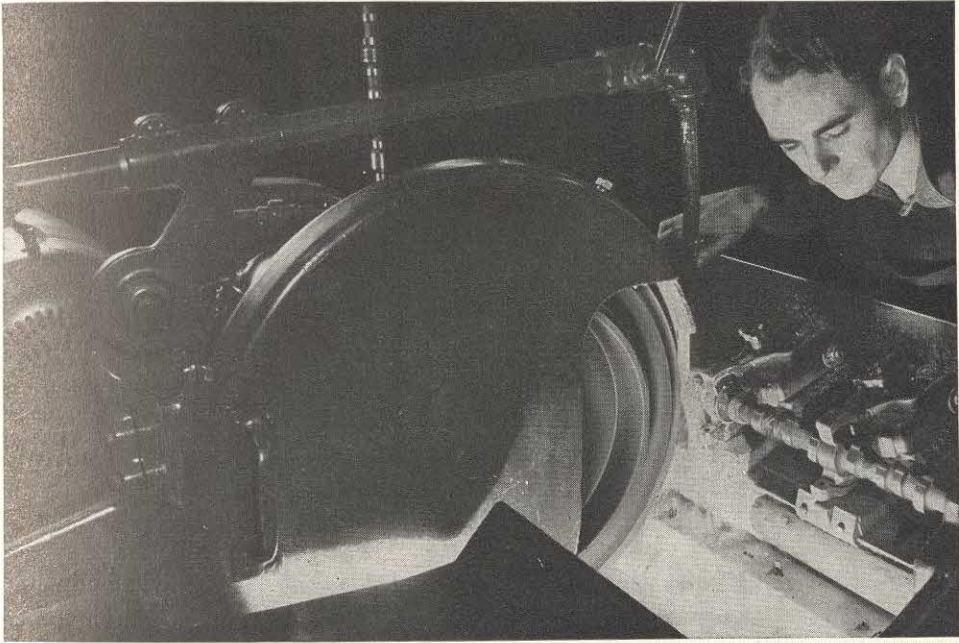
The finished die is placed in a huge body-shop press. For example, the roof die which stamps out the roof panel of a car weighs 65 tons and may require the full-time work of 24 men for 3 months. The jaws of the press close down and open, and a perfect stamping of an automobile top is released. The press stamps 90 sheets of steel an hour. Some cars require as many as 1250 separate dies.

*In the engine department.* Work-

ers in the engine department use machines fitted with special dies. These machines automatically turn out metal parts for the engine. Each part produced is identical with every other part made on the same machine. Some parts are accurate to the one-thousandth of an inch. Other workers assemble the engine, test it for performance, and make it ready as a unit for the final assembly line.

*The assembly line.* Henry Ford was the father of the assembly line, an idea that has spread to many other industries where mass production is a factor. Workers do not waste time rushing around for their work and their tools. They work in one location along a moving platform, or assembly line, that brings their work to them. The platform, electrically operated, moves along slowly at about 18 feet per minute. Each worker along the line does one or more specific operations to the partly finished car on the platform as it moves along.

On the final assembly line a bare frame comes along. As it moves, groups of men lean over to attach shock absorbers, springs, axles, brakes, steering gear, the engine, and finally the wheels, fenders, and the upholstered body itself. As partly finished cars pass along the platform, an assembly-line worker stands in the same station for long periods, ready to add a part or tighten a bolt. He does the same task over and over again. His work is timed, and he must be alert not to



COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

The **profiling-machine operator (4-78)** is a skilled worker. In an automobile plant he operates a special milling machine which produces camshafts automatically by following the contours of a smaller model.

hold up the work of others. *Inspectors* check each operation. After 80 minutes the completed automobile emerges at the end of the line. Almost once a minute, hour after hour, new cars operating under their own power roll off the end of the line, chalked "OK." A *yardman* routes each car to its proper location—rail-road siding, dock, or parking lot—for delivery to some local dealer.

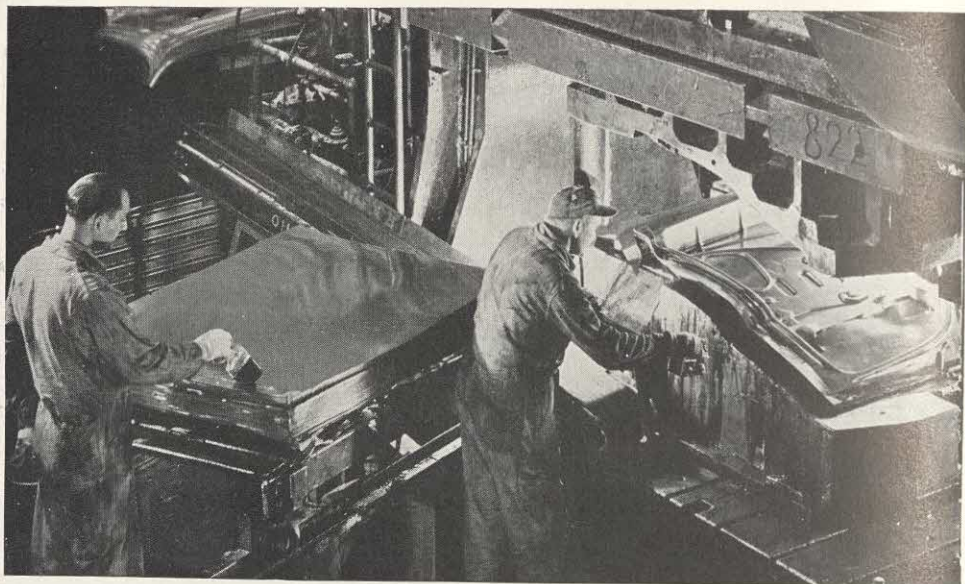
**Opportunities in the automobile industry.** In automobile plants and related industries many men and women find opportunities as *skilled workers*, *research specialists*, *plant and departmental supervisors*, *foremen*, and *clerical workers*. The U. S.

Employment Service lists 286 different jobs in an automobile plant. Of these jobs, one-fourth require no experience and the majority require less than a year of experience.

In most plants, approximately 10 percent of the jobs are on the final assembly line. However, the variety of assembly jobs is large, and one firm has more than 90 classes of assembly jobs in its various departments. In addition, it has 900 different kinds of production jobs, including 160 machine-operating classifications, 50 different press jobs, 75 jobs in forging, 40 in welding, and 160 in foundry work.

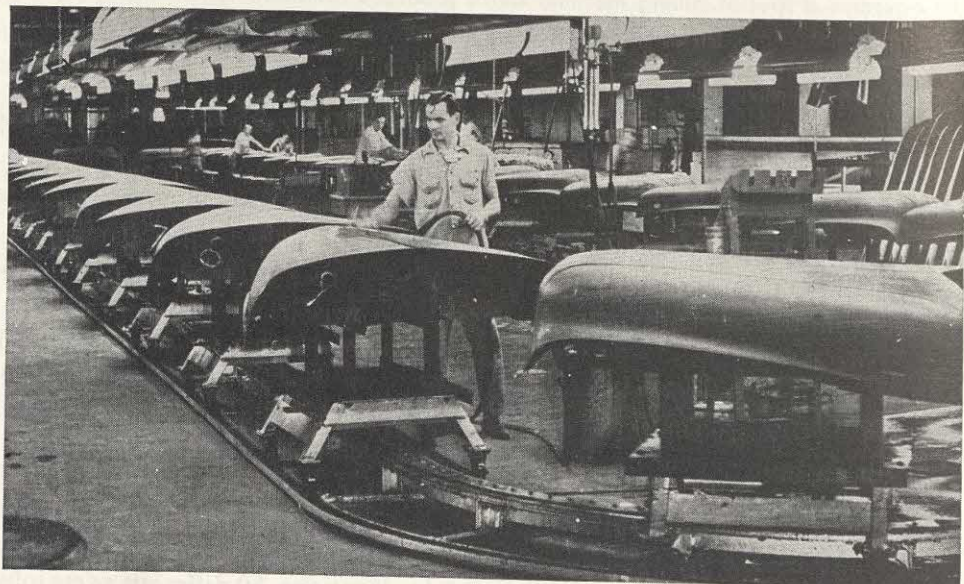
Skilled workers make up about





COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

**Automatic forming-press operators (6-88)** in an automobile plant feed the body-shop presses with sheets of metal. The jaws of the press close down and open with the precision and ease of fine watches, each time releasing a perfect stamping of an automobile part.



COURTESY AUTOMOBILE MANUFACTURERS ASSOCIATION

**A spray painter (7-16)** in an automobile plant sprays the car hoods and other parts as they come along on conveyor lines. Spray painters in other industries coat surfaces of various kinds of machines and manufactured articles.

one-sixth of the automotive plant employees, and apprenticeship programs are constantly in operation. These programs require 2 to 7 years of special study and job training to complete.

There are 1100 classes of non-production jobs in automotive plants, including tool-and-die making, maintenance, inspection, engineering, machine setting, material handling, etc. Such jobs have little to do with the actual production of cars.

It is estimated that workers in automotive firms in 1949 received an average of \$70 per week. The typical rate of pay for semiskilled automobile workers is probably above the rate paid the average skilled worker in most other manufacturing industries.

In plant offices many workers are required to keep extensive records on employees and their work. For each employee, there is an office record showing his education, previous experience, and efficiency on the job. Salaried jobs, mostly in plant offices, cover some 600 types of work and many vocations, such as *stenographers, artists, blacksmiths, woodworkers, doctors, chefs, bricklayers, statisticians, chemists, metallurgists, physicists, locomotive engineers, sewers of cloth and leather, watchmakers, and editors.*

Companies send their representatives each year to visit universities in search of new graduates with suitable qualifications for openings.

This is known as "recruiting for industry." Openings usually exist in the production-engineering fields—production control, product design, tool engineering, processing methods, testing, research, and business administration. One firm has a special department to assemble from its various divisions requests for college graduates. Interviewers then visit 75 colleges yearly in search of the most likely candidates. They have been known to hire as many as 350 graduates, in addition to 50 college seniors who work on a trial basis during the summer. Another firm offers a 2-year training course. Still another selects 40 to 50 engineering-college graduates yearly and enrolls them with pay in a 2-year post-graduate engineering school of its own. College men who apply for jobs often get consideration even though they were not interviewed by the firm's scouts.

**Job placement, changes, and promotions.** Personalities of workers vary, and firms in the automotive industry take this into consideration when assigning workers to jobs. Some individuals like to work alone. Some can plan and supervise the work of others. Some like definite routine jobs. Others do their best work when solving new problems. Each worker possesses some special skill, whether manual, mental, or a combination of the two. To accomplish mass production, the automotive firms try to fit each employee into the job that requires his particular ability, interest, and temperament. Factory work-





COURTESY GENERAL MOTORS

On the assembly line in an automobile plant, the workers stand in place and their work travels slowly past their stations. These cars are nearly ready to roll out finished at the end of the line.

ers also are given medical examinations so that they will not be placed in jobs that are beyond their physical strength.

Technological changes in automobile manufacture cause many workers anxiety about holding their jobs. Actually, the firms make special pro-

visions for fitting displaced workers into new jobs. For example, one company discontinued four departments but placed 80 percent of the workers in new jobs. The others were either unable or unwilling to adapt themselves to new skills. Older workers, whose original skills are no

longer needed, may work at light bench operations if they do not wish to learn a new trade.

In some cities automotive firms maintain special training schools for employees who wish to prepare for better jobs. New foremen take special training. The foremen usually rate workers on such factors on the job as performance, attendance, safety habits, ability to adapt to new tasks, and how they get along with their fellow workers. All *foremen*

and *plant supervisors* receive periodic courses and keep up in their reading on new methods in their fields and new developments in employer-employee relations.

Promotions begin when men become leaders able to do several jobs, lead a group of workers, or transfer to more responsible work. Many of the top executives worked their way up from the bottom, while others were trained specialists brought in for particular work.

### For Discussion

1. Why does the automobile industry continue to increase in size?
2. Why did the automobile industry locate in Michigan, Ohio, and Indiana?
3. What are parts plants?
4. Why must automobile manufacturers compete with rival firms for business?
5. Bring to class several automobile advertisements and discuss their appeal to customers.
6. How are cars marketed in the United States?
7. Describe mass production of automobiles.
8. Discuss assembly-line procedures.
9. Tell about the number of different jobs in the automobile industry. [Note: Consult the *Dictionary of Occupational Titles*, Volume II, page 538, "Automobile Manufacturing Industry."]
10. What is meant by "recruiting for industry"?

### What to Read

*Automobile Facts and Figures*. Automobile Manufacturers Association, New Center Building, Detroit 2 (Annually). (Free)  
*Career; the Annual Guide to Business Opportunities*, William A.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the automobile industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Show the effect of applied art in the development of automobile design by a series of pictures of early and late car models.
<b>BUSINESS:</b>	Tell about the business organization of an automobile plant.
<b>ENGLISH:</b>	Collect automobile advertisements and compare the claims made for different makes of cars.
<b>HEALTH:</b>	What particular problems does the automobile industry find with regard to health and accidents of automobile workers?
<b>HOME ECONOMICS:</b>	Which should come first—buying a car or buying a home? Under what conditions? Compare the advantages to a family.
<b>LANGUAGES:</b>	Find out from catalogs or from dealers the makes of foreign cars and try to obtain photographs. How do they differ from American cars?
<b>MATHEMATICS:</b>	Apply mathematics to a real problem in owning a car—such as how much it costs Mr. X to drive to and from work each day, or how much he can save by paying cash instead of time payments.
<b>MUSIC:</b>	Explain the popular demand for radios as equipment for automobiles.
<b>OCCUPATIONS:</b>	What jobs do local high school graduates hold in the automobile industry or in related industries?
<b>SCIENCE:</b>	Explain the theory of the combustion engine. What happens to the gasoline?
<b>SHOPWORK:</b>	Demonstrate how a gas engine works.
<b>SOCIAL STUDIES:</b>	Report on the effect of the automobile on business, residential areas in cities, schooling of children in rural areas, road improvement, employment, revenue from taxes, and other social and economic problems.

Douglass, editor. Career Publications, Inc., 52 Vanderbilt Ave., New York 17, N.Y., 1954. 198 p.

*The Development of American Industries*, John G. Glover and William B. Cornell. Prentice-Hall, Inc., New York, 1946. 1005 p.

*Employment Outlook in the Automobile Industry*, Bureau of Labor Statistics Bulletin 1138. U.S. Government Printing Office, Washington 25, D.C., 1953. 33 p. (25 cents)

*Establishing and Operating an Automobile Repair Shop*, U.S. Department of Commerce, Industrial Series No. 24. U.S. Government Printing Office, Washington 25, D.C., 1946. 141 p. (35 cents)

*Model Makers, Sample Body Builders, and Related Occupations*. Michigan Unemployment Compensation Commission, Detroit, 1950. 15 p.



## CHAPTER 27 THE TEXTILE INDUSTRY

For as long as we know about, civilized people used cotton, wool, and flax (linen) to weave into cloth. For thousands of years the principal textile fiber was cotton. The Chinese, many hundreds of years ago, wove wool into cloth. We know that the Egyptians were skilled weavers of fine linen because we can see examples of their work today in museums. Many museums show Egyptian mummies, several thousand years old, still wrapped in yards and yards of well-preserved fine linen cloth.

**Sources of fibers.** The word "textile" comes from the Latin meaning "to weave." The textile industry, as we know it, includes (1) preparing raw materials for the loom; (2) spinning fibers into yarn and thread; and (3) weaving cloth.

Both natural fibers—cotton, wool, flax, and silk—and man-made fibers—rayon, nylon, Orlon, and other synthetic fibers—are used in weaving. Before the fibers can be spun into thread for weaving, they must be processed and cleaned. For example, wool comes from the fleece sheared from sheep. The wool is then sorted and graded, washed, dried, picked,

and carded (combed) before it can be spun into yarn. Cotton grown in the field is picked, put through a gin to remove the seeds, cleaned, and carded. Linen is made from flax, an annual plant which is hard to grow. After the plants are pulled and the dried seeds and leaves have been removed, the flax is soaked in water, beaten to loosen the fibers, and combed ready for spinning. Silk comes from the cocoons of the silkworm, and the fibers must be unrolled and processed for spinning.

Man-made fibers, produced in the laboratories of the chemist and the engineer, have revolutionized the textile industry in recent years. These synthetic fibers are especially desirable because of their uniformity, strength, washability, and many uses. Popular demand for fabrics made of synthetic fibers has brought many changes in textile manufacture and textile products. The silk mills lost out when this change came about, and the wool manufacturers have already felt the effect of the new trends.

**Making cloth.** To understand how cloth is made in a factory, it is necessary to understand how fibers were

once made into cloth by hand. All textile machinery was developed to replace each one of these manual processes.

*Carding.* "Carding" means combing. Raw materials for spinning are received in a tangled mass and must be straightened out. Originally this combing process was done by hand by a worker using two wooden "cards" that looked like large hair brushes. The fibers were combed out, leaving a loose roll called a "sliver." Today textile machines—called "carding machines"—do this work and produce miles of loose, round, white ropes that are still called "slivers" as of old.

*Spinning.* Spinning means "twisting" fibers into thread or yarn. Spinning—a skill older than anyone knows—was one of the earliest industrial arts for women. Originally the spinner used two implements—a distaff and a spindle.

The distaff, held under the spinner's arm, supported a bunch of flax or wool fibers. The word "distaff" is often used today as a symbol for women or women's work. The spindle, hanging by her side, was a round stick about 15 inches long with a notch to hold the yarn. As the spinner drew strands of fibers from the distaff, she twirled the spindle by a movement of her right leg and twisted the fiber into strong, fine yarn.

The spinning wheel was invented 400 years ago. On this simple machine the spindle was placed in a

horizontal position and turned by a foot treadle. Modern spinning frames in textile factories twist mile on mile of thread in an amazingly short time and are so automatic that very few operators are required for their operation.

*Weaving.* Weaving is done on a loom. The ancient Egyptians used the simplest form of loom for their weaving. From old paintings we know that such a loom consisted of a cross bar over which threads, called the "woof," were woven in and out, one at a time, through the "warp." To help in this process, a "shuttle" (piece of metal or wood) was attached to the horizontal thread. By packing the horizontal threads close together, the cloth was firmly woven. The modern factory loom takes the place of the small hand loom. Long rows of these looms turn out miles and miles of cloth automatically. The operators keep watch for broken threads and defects.

**Textile factories.** Today, even with modern automatic machines, raw materials are still processed, spun, and woven much as they were 4000 years ago. Inventors of textile machines analyzed each separate skill of the spinner and created a machine to do similar work. As the machines were improved, they could spin and weave at tremendous speed. The spinning jenny and the power loom were invented in England in 1760. Textile workers who tended these machines were not allowed to leave England for fear that the secret of





COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY KNELL

A Navajo Indian uses a wooden spindle to spin yarn for a rug. She hooks a strip of wool over the top of the shaft, pulls out a loose strand, and twirls the spindle to twist the yarn and wind it on the spindle. She respins it two or three times to make it the right size.

the machines would leak out. Meantime America had no textile machinery.

In 1790 Samuel Slater, a textile mechanic, left England in disguise and came to America. In Pawtucket, Rhode Island, he copied the machines from memory and set up a textile factory. New England is still an important center for the manufacture of textiles, but the South now has many large textile factories.

With few exceptions, most textile factories are small plants. The Census of Manufactures, in 1947, listed the number of establishments and the number of employees in the textile industry as shown in the table on page 438.

### COTTON TEXTILES

Cotton was the first of the textiles to be brought to the factory. The spinning and weaving of cotton repre-



COURTESY PEPPERELL MFG. CO

The doffer (6-19) operates a machine for spinning. This operator is removing full bobbins from the roving frame and replacing them with empty bobbins. The cotton sliver in the foreground comes from drawing frames in large cans and will be spun down to size for weaving percale sheeting.

sents the largest branch of the textile industry, with half a million workers employed in 1200 mills and finishing plants in operation in 1949.

Processes for making cotton textiles require a climate with considerable heat and humidity. Many mills have installed air-conditioning plants that allow satisfactory atmospheric conditions for the working of cotton without affecting the comfort of the workers. Some cotton

mills carry out only a part of the process of manufacture. For example, certain mills make only "sale yarn" to be sold to other manufacturers for weaving. Others make only "gray goods," ready for other factories to dye and finish.

Eighty percent of the cotton-textile mills are located in the cotton-growing states of the South, and 20 percent are located in New England. The number of spindles in place in



the various states, shown on page 440, gives a clue to the important locations of the industry.

**Employment.** In a typical cotton-textile mill, 26 percent of the workers are skilled, 38 percent semi-skilled, and 28 percent unskilled. The remainder are clerks (1%), service workers (3%), and miscellaneous (4%). In one large cotton mill the employment department listed 675 different jobs, but the largest number were in production, maintenance, and service departments.

One-fourth of the workers—mostly those in northern mills—belong to one of two labor unions, the Textile Workers Union of America (CIO) and the United Textile Workers of America (AFL). Age is not a particular factor for jobs in cotton mills. Normally, one-fifth of the employees are under 20 years of age. A few are over 60. Unskilled workers can progress to the more skilled jobs in a short time.

Employees are discharged from

cotton mills for the same reasons as they are discharged from other industries. In one plant, for instance, of those discharged, only 10 percent lacked necessary skills. The others were discharged for such character defects as carelessness (14%), uncooperativeness (11%), laziness or disinterest (10%), absenteeism (9%), and tardiness (7%).

Machine operators earn from \$1 to \$1.35 an hour. The standard workweek is 40 hours, although some run as much as 44 to 48 hours. Supervisors and overseers earn from \$60 to \$110 and upward a week. The usual method of payment is by piece rates, and rates in the North are somewhat higher than in the South.

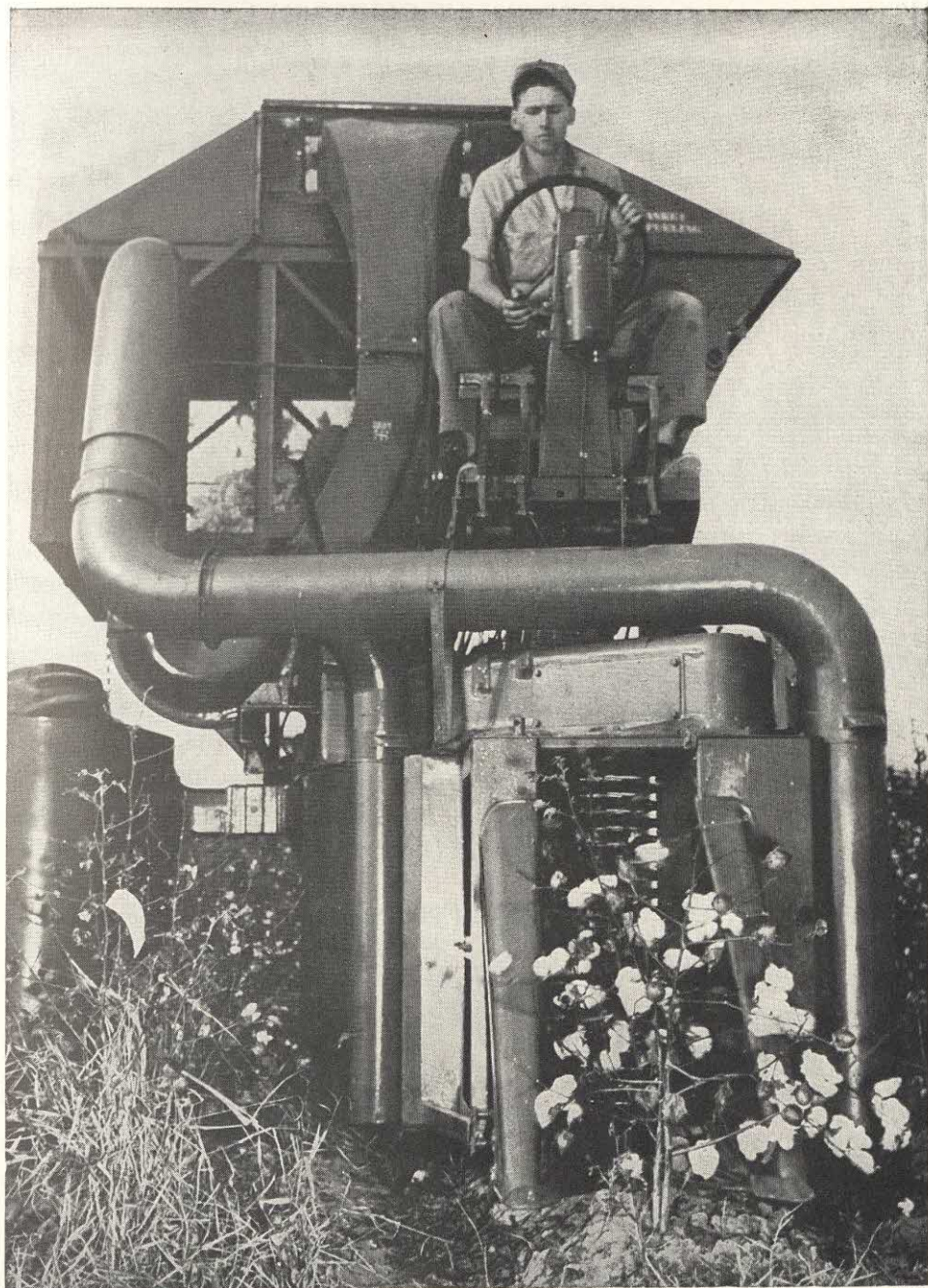
Applicants for jobs find work through direct application to the State Employment Service, Employment Bureau of the Textile Manufacturers Association, the union, or relatives and friends.

**Women in the mills.** Normally women make up 42 percent of the

### NUMBER OF TEXTILE PLANTS AND WORKERS

Size of Plant	Textile Plants		Textile Workers Employed	
	Number	Percent	Number	Percent
1-19 employees	3,124	38	25,396	2
20-99 employees	2,539	31	123,821	10
100-499 employees	1,914	23	436,674	35
500 employees and over	608	8	647,540	53

**This table should be read as follows:** (Last line) More than half (53 percent) of the textile workers are employed in 608 large factories that employ 500 or more workers, but these factories represent only 8 percent of the total number of textile establishments.



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

**Cotton-picker operator (3-49).** With a one-row spindle-type cotton picker, a cotton-picker operator can pick an acre of cotton in 2 hours, while picking cotton by hand may take 50 man-hours per acre.



cotton-mill workers in the North and 36 percent of them in the South. The textile mills employ more women than any other industry, and 9 out of 10 of the women are in semiskilled jobs. For many mill jobs, women are preferred because of their patience and dexterity, but women also find work as *laboratory assistants, designing assistants, clerks, stenographers, telephone operators, receptionists, first-aid attendants, and personal interviewers.*

**Preparation for the work.** One-third of the workers in a cotton mill can probably be trained in 2 months' time. Another third can reach average productivity in less than 6 months.

The manufacturing processes have become so mechanized that most of the work in a cotton factory is done by operatives who tend the machines. The most important qualifi-

cation for an operative tending a machine is alertness so as to prevent damage either to the product or to the machine. Many plants provide apprentice training for *loom fixers, weavers,* and other skilled workers. In cotton-textile centers a few vocational schools give instruction in the operation of cotton machines—spinning frames, twisting, weaving, and spooling. Professional schools offer courses of study related to the textile industry and textile engineering. Among the schools offering 4-year degrees or certificates in textile work are Alabama Polytechnic Institute, Georgia Institute of Technology, Massachusetts Institute of Technology, Bradford-Durfee Technical Institute (Massachusetts), Lowell Textile Institute (Massachusetts), New Bedford Textile Institute (Massachusetts), North Carolina State College, Philadelphia Textile Institute,

### COTTON SPINDLES IN PLACE, BY STATES

	Number	Percent
North Carolina	5,900,000	25
South Carolina	5,700,000	25
Georgia	3,200,000	14
Alabama	1,700,000	7
Massachusetts	2,600,000	11
Rhode Island	700,000	3
Maine	600,000	3
Connecticut	500,000	2
New Hampshire and Vermont	300,000	1
All other states	2,200,000	9
Total in United States (1949)	23,400,000	100



COURTESY FARMERS HOME ADMINISTRATION, PHOTO BY LEE

**A warp-winding-machine operator (6-19)** works in a cotton mill. Here an operator is repairing a break in the thread.

Rhode Island School of Design, Clemson Agricultural College (South Carolina), Texas Technological College, Institute of Textile Technology (Virginia). Further information may be obtained from such textile associations as the following: American Cotton Manufacturers Association, Liberty Life Building, Charlotte, North Carolina; National Association of Wool Manufacturers, 386 Fourth Avenue, New York 16, New York; and Rayon Yarn Producers Group, 350 Fifth Avenue, New York 1, New York.

**Jobs in a cotton mill.** Workers in a cotton mill might be divided into

three groups: (1) foremen, overseers, and supervisors; (2) those engaged in production, maintenance, and service; and (3) professional workers.

*Foremen, overseers, and supervisors.* While the work of the people in this group is important, the number of workers is not so large as in the second group of persons who work in production, maintenance, and service. A *foreman* (5-91) supervises the work of others, directs one or more departments, keeps records of costs, and hires and fires employees. He needs a high school education, some technical training through vocational schools or cor-



responsedence study, experience on the job, and ability to handle people. The *assistant foreman* performs similar duties as, but under the direction of, the foreman. The *second hand* likewise assumes the first level of supervisory work and assists the department foreman. The *section hand*, or *third hand*, handles one section of a department, inspects quantity and quality of products, and trains new workers. A *weaving inspector* (6-19) inspects cloth being woven on the looms to find imperfections. In the finishing department, cloth is finished, inspected, and graded. The *cloth finisher* (5-91), a foreman, supervises all finishing-department workers and plans and assigns their work. The *cloth grader* (4-19) classifies cloth into grades according to the number of defects.

*Workers in production, maintenance, and service.* Most of the jobs in a cotton mill are within this group. Beginners without skills take jobs as laborers. Most of them hope to advance to machine operators and section hands. *Bale openers* (9-88) are laborers who open bales of cotton. *Sweepers* (2-86) and *truckers* (9-88) are beginners who may learn how to run a machine and advance to *oiler* (9-71) and then on to section hand. Other low-skill workers include *carding-machine feeders* (8-19), who feed cotton into cleaning machines; *sliver-lap-machine tenders* (6-19), who blend carding slivers into single rolls; and *comber tenders* (6-19), who operate comber ma-

chines that comb out short fibers and shape the cotton for spinning. Some advance to semiskilled *card grinders* (6-18), who sharpen, adjust, and repair carding machines. *Frame spinners* (6-19) are important workers who operate several hundred spindles to twist strands of cotton into yarn. They feed in the cotton, repair broken strands, and replace full bobbins (spools). A spinner may learn her work in 6 months and may advance to section hand. *Doffers* (6-19) remove filled bobbins and replace them with empty ones. *Battery loaders* (8-19) keep the looms replenished with woof-yarn bobbins. *Weavers* (4-15), who are skilled workers, may tend up to 30 looms apiece, repair breaks in threads, remove imperfections and broken threads, and call the loom fixer when repairs are needed. A weaver usually specializes on a particular loom and material, but as a beginner, usually 18 to 25 years of age, he works as a trainee, battery loader, or apprentice.

The highest skilled male production workers are the *loom fixers* (4-16). They maintain textile looms in good operating condition. No one plant employs many loom fixers, but there are about 28,000 loom fixers in the country, employed mainly in North Carolina, Massachusetts, and South Carolina. The mills need about 600 loom fixers annually for replacements. Loom fixers find jobs in the Atlantic Seaboard states, in the southern cotton mills, in the





COURTESY PEPPERELL MFG. CO.

The first step for a girl who is learning to be a doffer is that of removing full bobbins of yarn from the spindles of the spinning frame and replacing them with empty bobbins.

northern woolen and worsted mills, and in the rayon, silk, and nylon mills, in both the North and the South. Beginners usually start as weavers, or in similar work, and should have one or more vocational courses in machine repairing, machine weaving, shop mathematics, or textile design. They can learn the work in 30 months. Loom fixers need ability to plan, alertness to detail, interest in mechanics, and hand and finger dexterity.

*Professional workers.* Graduates of professional schools find work in the mills as *accountants, engineers, chemists, and health workers*. The industry, however, employs few such workers, and they are often trained on the job rather than in college. *Cloth designers (0-46)* are highly skilled professional workers who usually have been educated in a textile school. They create new patterns, make up and change pattern-control devices on looms, and pre-



pare and process specifications of cloth.

### WOOLEN AND WORSTED TEXTILES

The woolen and worsted industry is one of the most important industries in New England, where 60 percent of the woolen industry is located. Woolens are also manufactured in Pennsylvania, New York, New Jersey, and 25 other states. This industry, however, is smaller than the cotton-manufacturing industry, and has only one-third as many mills—2,200,000 spindles and 120,000 employees.

Woolen and worsted mills manufacture yarn (excluding carpet and rug yarns) or cloth containing 25 percent or more of wool. Worsteds are fairly light in weight with a smooth surface. Woolens are softer with a napped finish.

**Outlook.** Improved cotton fibers and newer man-made textile fibers have given the woolen industry severe competition. However, spinners and weavers of woolens have adjusted their machines to use rayon fibers also. In combination with wool, these fibers produce attractive products, increase the demand, and help keep the price of woolen goods down. Some of the work in woolen mills is seasonal because the demand for woolens increases with cold weather and slackens during summer.

**Working conditions.** Working con-

ditions are generally good. Plants are well lighted, but most have a hot, humid atmosphere. Some departments are fairly noisy. The accident rate is average for most manufacturing industries. Employers prefer workers from 16 to 24 years of age for training, because most of the jobs require good eyesight, hand-eye coordination, and finger dexterity—qualifications which young persons have. Deafness is not a handicap. Nearly half of the workers are women. Opportunities for promotion are generally better for the men employees, since they fill most of the skilled jobs. The majority of workers belong to a union.

**Preparation for work.** Semiskilled workers are often trained in the mills in from 1 to 8 weeks. One out of five workers requires 6 months' training, and one out of ten requires a year or more. Vocational schools in textile areas provide day and evening classes in spinning, weaving, and machine operation. Apprentice training is generally given for maintenance work. Except for the professional and supervisory jobs, no formal education is required for jobs in the woolen mills.

**Jobs in the woolen mills.** In 1949 the hourly wages in woolen mills averaged \$1.30. Workers are mostly semiskilled operatives who tend machines. In producing woolens and worsteds they carry on four main processes: (1) carding and combing, (2) spinning, (3) weaving, and (4) finishing.



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY BUCK

**A sheep shearer (3-49)** shears wool from sheep with hand-operated or power-driven clippers. He clips each animal closely, taking care not to cut or nick the skin. This primitive method is the way we get our raw material for wool manufacture. At the mill a **wool sorter (4-19)** will sort and grade the wool according to length of fiber, color, and fineness.

*Carding.* As the raw wool comes to the factory, *wool sorters (4-19)* sort it according to quality and type. *Scouring-machine tenders (6-19)* clean it, ready for carding and combing. *Carding-machine tenders (7-57)* untangle and straighten out the wool fibers, ready for twisting loosely into "roving."

*Spinning.* In a woolen mill the *frame spinners (6-19)* make up the most important group of semiskilled workers. *Mule spinners (4-19)*, skilled operators, operate the mule-spinning machine through which the roving is drawn, twisted, and wound.

*Weaving.* Weaving is the final process in making cloth. *Loom fixers*



(4-16) set up and adjust the looms. *Weavers* (4-15), skilled workers, operate the machines, watching the operations closely. Weavers make up the largest group of skilled workers and are often promoted to become loom fixers. The woven fabrics are generally gone over by *inspectors*, or *cloth examiners* (6-19), women employed as *burlers* (6-19) to cut off loose ends of threads, and *menders* (4-19) who make repairs with needles.

*Finishing.* In finishing cloth, skilled workers, including the *master dyer* (5-18), apply their knowledge to coloring the fabrics. In the dye house, however, the dyeing is actually done by unskilled and semi-skilled workers who wash, pull, shrink, and dry the cloth. They lift heavy loads and are on their feet all day. Semiskilled workers in the dry-finishing rooms shear, press, brush, and steam the fabrics.

### SILK TEXTILES

According to a Chinese legend, an ancient Chinese Emperor's wife named Si Ling Shi unwound a cocoon and used the fiber for weaving a bit of cloth on a loom. She thus wove the first silk fabric and became known as the Goddess of the Silk Worm. Silk was named in her honor, "si" being the Chinese word for silk.

The silk fiber is deceiving in appearance. It looks fragile, but actually it tests among the strongest natural fibers known. Before nylon came

into use, silk was used for making such things as parachutes, women's hose, and women's underwear.

Because the silk fiber needed delicate handling, silk did not enter the factory until after the manufacture of cottons and woolens. Before World War II the United States was the greatest consumer of silk, and this made the silk industry very important to such countries as Japan, China, France, Italy, Spain, the Balkans, Syria, and Persia (Iran).

Since we have the mulberry trees that are necessary for feeding silkworms, it would be possible to produce silk fibers in the United States. However, our people are unsuited for, and unwilling to do, the tedious, low-paid, hand labor that is necessary in the care of silkworms and their cocoons.

The manufacture of raw silk is centered in New Jersey and Pennsylvania, but the demand for new man-made fibers, such as rayon and nylon, has replaced the demand for silk to such an extent that the old silk mills have passed out of existence. It was too difficult to adjust their machinery and organization to the production of goods made from synthetic (man-made) fibers. For the past 20 years the consumption of silk in this country has fallen off rapidly.

### TEXTILES OF MAN-MADE FIBERS

Many fabrics made from synthetic fibers under various trade names now

appear on the market. Research workers in the laboratory create and perfect these fibers, and factories with special machines use them to produce new textiles. The fibers, once created, go through the same process of spinning and weaving as natural fibers.

**Rayon.** In 1885, M. Chardonnet, a Frenchman, dissolved cotton in ether in an effort to produce artificial silk. He obtained a gummy substance which he forced through many tiny holes in a "spinnerette," similar to the way you force toothpaste out of the single hole at the top of a tube. The holes in this machine are so small as to be hardly visible to the eye. The threadlike product coming through the spinnerette hardens when exposed to the air and thus becomes the fiber that can be twisted into yarn and woven into cloth. Wood pulp can also be used instead of cotton to make the gummy substance. After many improvements the textile was given the name "rayon" because it suggested rays of the sun. Its low cost and uniformity make rayon an important fabric with many uses.

In 1911 the first rayon was produced in this country, and the United States is now the leading rayon manufacturer in the world. In 1949 the industry employed 55,000 workers with average hourly earnings of \$1.42. Jobs and working conditions in rayon factories are much the same as those in cotton and woolen plants. Most workers are

semiskilled operatives. Jobs are likely to increase in this country because of the great demand for rayon fabrics and because industry finds many unusual uses for rayon.

**Nylon.** Nylon is another of the many synthetic yarns that have come out of the chemical laboratory. It is used for women's stockings, parachutes, underwear, dresses, men's shirts, tooth brushes, insulation, and hundreds of other purposes. Synthetic fibers often require a starch-like substance from plants known as "cellulose." Chemists, therefore, experimented with coal because they knew that millions of years ago coal was a living tree chiefly composed of cellulose. They produced nylon, made from coal, air, and water, with all of the qualities found in silk. Strong, tough, elastic fibers are forced through spinnerettes similar to those used in the manufacture of rayon. The size of the fibers can be controlled to produce fine or coarse fabrics. Semiskilled operatives produce the fibers, and the usual spinners and weavers tend the machines that produce the fabrics.

**Fiberglas.** Among the more unusual man-made fibers is Fiberglas, made of a certain kind of glass melted under great heat. This glass can be drawn out into fine fibers that can be twisted into threads and woven into cloth as smooth and soft as silk. The fabric, known by the trade-marked name Fiberglas, is heavier than similar products and is used for insulation as well as for



such heavy furnishings as draperies.

**Other man-made fibers.** Since the advent of rayon—the first man-made fiber—many other synthetic fabrics have appeared on the market. Orlon, Dynel, Dacron, and Acrilan are some of the newer fabrics made with synthetic fibers. Although these fabrics may have different qualities and

the fibers may be made of different substances, they are all made by the same method that is used in the manufacture of rayon. One particular advantage that these newer fabrics have over silk is that a garment made of one of them may be washed and dried overnight and be ready for use without ironing.

### For Discussion

1. Where do natural fibers for spinning come from?
2. In the textile industry, what is meant by "carding"?
3. Explain the process of spinning.
4. How is weaving done?
5. Tell how textile machinery came to be set up in New England.
6. Why are women preferred as textile workers?
7. What is the nearest textile school to your community?
8. Discuss employment in a cotton mill.
9. Where are the majority of the woolen mills located?
10. What are the four main processes carried out in a woolen mill?
11. Compare natural fibers with man-made fibers used in textiles.
12. How are rayon fibers made?

### What to Read

*The Cotton Industry*, Josephine Perry. Longmans, Green & Co., Inc., New York, 1943. 128 p.

*Looking Ahead with Cotton—Some Trends and Some Choices*. U.S. Department of Agriculture, Misc. Publication No. 584, Washington 25, D.C., 1945. 22 p. (Free)

*Textile Workers* (Picture Fact Books), Alice V. Keliher, editor. Harper & Brothers, New York, 1939. 56 p.

*Your Career*. Textile Information Service, 551 Fifth Ave., New York 17, 1948. 30 p. (Free)

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the textile industry.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Use cross-section paper (squared) and create a textile design (similar to cross-stitch work).
BUSINESS:	What is meant by "seconds" on merchandise in retail stores?
ENGLISH:	Write an advertisement for a home magazine describing a nylon material that can be used to make shirts, blouses, or window curtains.
HEALTH:	Discuss textiles for clothing that are most desirable for physical comfort in summer or winter temperatures.
HOME ECONOMICS:	What should a homemaker know about textiles? How does such a knowledge help her in making good selections of personal and household fabrics?
LANGUAGES:	What foreign names are applied to some fabrics?
MATHEMATICS:	Compare the costs of various fabrics and figure out whether it is cheaper to buy material and make a dress or buy a ready-made dress.
MUSIC:	Play a recording of "The Spinning Song" by Mendelssohn and interpret its meaning.
OCCUPATIONS:	Demonstrate how cotton is carded, spun, and woven. Obtain pictures of textile workers and textile mills for an exhibit.
SCIENCE:	Demonstrate simple laboratory tests for woolen textiles.
SHOPWORK:	Discuss the repair of mill machinery and the job of the loom fixer.
SOCIAL STUDIES:	Tell about the industrial revolution—the removal of hand crafts from the home to factories, undesirable living conditions at first, and the gradual change that now permits everybody to enjoy manufactured luxuries. Look up the derivation of the word "sabotage" from "sabot," meaning shoe.



# CHAPTER 28 FOOD-PREPARATION INDUSTRIES

**A**s a result of recent laboratory experiments and discoveries concerning foods, many new occupations have been established in the food industries. Every time a new food product or process is ready to be marketed, industries must find new methods and machines to take care of the work of processing and distributing the food products, and thus new occupations are created.

**Benefit to homemakers.** The food industries cater to the needs of the busy homemaker, especially those who do their own work in the kitchen. New food products are planned to attract the housewife who wants to save time and to prepare new and tasty dishes for her family. The housewife no longer lays in a winter's supply of staple groceries, because modern kitchens seldom have enough storage space for that purpose. The food industries capitalize on this fact by putting up their products in convenient-sized packages that can be purchased as the need arises. This packaging requires automatic machines and operatives to run them.

**Modern food products.** If you had quick-frozen strawberries for break-

fast this morning you used one of the products of a fairly new food industry. The cake served at your last party may have been made from one of the well-advertised cake mixes. Last night's biscuits may have been prepared from biscuit dough, packaged and refrigerated ready for the oven. Even milk is sold in powdered or concentrated form, ready to be mixed with water to make whole milk. The industries constantly prepare for our tables many forms of cooked and semiprepared foods, frozen out-of-season delicacies, and strained baby foods. These foods are attractively packaged in tin, glass, or moistureproof cartons.

Garden-fresh vegetables and fruits that have been quick-frozen are kept refrigerated at the stores for use months later. Dehydrated (water removed) foods—soups, vegetables, milk, and orange juice—need only water to restore their properties. Dry mixes that need only milk or water added are available for cakes, pies, ice cream, candies, and desserts. Packaged fruits, vegetables, and meats in transparent bags attract customers in self-service stores. Frozen turkeys that have been cleaned, stuffed, and

wrapped in aluminum foil are sold ready for the oven. As the turkey cooks in the metal foil, it is naturally basted in its own juices.

Special methods are used for packaging and refrigerating perishable seafoods, such as lobsters, clams, oysters, and fish. These products are now shipped by air from coast to coast. Likewise tropical fruits, unfamiliar to our tables, are specially packed, handled, and flown to our markets.

The products of food industries in the United States are grouped by the Bureau of the Census as shown in the list below.

### MEAT PACKING

The American meat-packing industry, with 274,000 employees in 3974 plants, is one of the world's largest industries. Of all workers employed in meat-packing plants, 70 percent work in four well-known large packing plants: Swift, Armour, Wilson,

and Cudahy. Most of the meat-packing workers are employed in Illinois, Iowa, Minnesota, Kansas, Nebraska, Ohio, New York, Pennsylvania, Texas, California, Missouri, and Indiana. However, there are meat-packing plants in most good-sized cities. A few plants slaughter only, but 9 out of 10 plants also pack and cure meat, manufacture sausages, and process byproducts.

**Nature of the work.** Every year great numbers of calves  $1\frac{1}{2}$  to 2 years old are brought from the western range lands and shipped by rail to midwestern stockyards where they are fattened for sale. When they are "finished"—that is, fattened—the steers are again shipped to stockyards where they are sold to the highest bidder. The buyer for the packing house who purchases them has them slaughtered and prepared for sale as beef for our tables.

Operations in a packing plant are similar for both cattle (cows, bulls, and steers) and small stock (lambs

### FOOD AND KINDRED PRODUCTS FROM INDUSTRY

Meat products\*—3974 plants in the meat-packing industry

Dairy products—5423 plants in the dairy industry

Canned, preserved, and frozen products\*—3826 plants in the  
canning and preserving industry

Grain-mill products (flour, etc.)—4206 plants in the milling industry

Bakery products\*—7123 plants in the baking industry

Sugar—181 plants in the sugar-refining industry

Confectionery—1754 plants in the candy industry

Beverages\*—6755 plants in the beverage industry

Miscellaneous (shortening, oils, flavorings, etc.)—6691 plants

\* Discussed in this chapter.





COURTESY GENERAL FOODS CORP.

**Poultry pinners (8-09)**, generally women, remove the pin feathers from turkeys. Most of the feathers have already been removed by a **poultry-picking-machine operator (8-09)** who holds the scalded fowl against rubber fingers on a rotating cylinder.

and calves). Jobs concern mainly such operations as slaughtering of animals, preparation of the carcasses, processing the various cuts, and sale and distribution of the products.

Workers perform their duties along a kind of assembly line—only they dissect the product (carcasses) rather than assembling it. As the carcasses move slowly along an overhead rail, many workers with knives and saws cut them apart.

Some idea of the variety of work done in meat-packing plants can be gained from the following departments or divisions of such work:

Cattle killing	Fancy meats
Hog killing	Sausage making
Sheep and calf killing	Lard making
Offal (refuse)	Curing meat
Casings	Canning
Cutting beef and pork	Research
	Management
	Sales

Activities begin at the top floor of the packing plant, where the hogs and cattle are driven. In the process of slaughtering, a *knocker* (8-09)—a laborer—stuns the animal with a blow from a sledge hammer. This is the most humane way of stunning an



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY FORSYTHE

**Pork trimmers (8-09)** in a meat-packing plant trim the fat from pork bellies. Note that women are employed in this work as well as men.

animal but requires a strong man, free from any squeamishness. The *sticker* (8-09) swiftly dispatches the animal with a knife. Hogs are de-haired by a *scalders* (8-09), by scalding them with hot water and coating them with resin.

Overhead conveyors bring the meat along for processing. The *head dropper* (6-09) cuts away the head, and the *tongue cutter* (8-09) removes the tongue. The rest of the carcass is skinned by several special workers who take care not to injure either the hide or the meat. *Rippers and splitters* (8-09) slit the carcass, remove the viscera, and expose the kidneys for government inspection. This work requires experience, skill, and strength to avoid ruining the

cuts of meat. No part of the animal is wasted. Parts once thrown away now go to the "tank" where many valuable byproducts, such as soap, glue, dog food, fertilizer, and poultry feed, are made. All parts of a side of beef which cannot be sold are removed by *trimmers* (8-09). The carcass is then washed by *washers* (8-09) and finally stamped "Inspected and passed."

At least two-thirds of these workers do the same task over and over again as each carcass comes along on the conveyor. Few of them are highly skilled workers, and there is little chance of doing other work because there is no system of promotion.

The meat is then cut into parts by *meat cutters* (4-09)—skilled workers



who know animal anatomy and can cut meat with knives, saws, and cleavers so as to leave little waste. Once butchered, the cuts of meat are stored or sent on for processing.

Semiskilled workers in the processing department cure, cook, and pack ham, bacon, tongue, and other parts, make sausage, and prepare products according to formulas. In making the byproducts, semiskilled workers prepare internal organs for processing and tend machines. In the canning department more women than men are employed. These women wash containers, trim meats, skin tongues, bone chickens, and stuff cans. Automatic machines are used, but some packing is done by hand. Men do the cooking, using large automatic steam cookers.

No work can be left over from one day to the next. By the end of each working day, all work must be completely finished and the rooms scrubbed clean, ready for the next day. Working conditions in most meat plants are fairly satisfactory, even though some workers have to work in a warm, steamy atmosphere and others in refrigerated rooms at freezing temperatures. Although some accidents occur—mainly from wet, slippery floors or sharp knives—hazards are relatively low. Employees in nearly every state are covered by Workmen's Compensation laws.

**Government inspection.** Government employees enter the meat-packing industry as United States Government inspectors. Every animal

that is slaughtered must first be inspected by these men. After slaughter and before the meat reaches the storage room, he again inspects the glands, organs, and carcass. All meat that is passed bears his blue stamp of approval. Federal workers also grade meat, although government grading of meat is not compulsory. Some markets do not handle government-graded meat. A customer can find this out by asking. The seven government grades are as follows:

1. U. S. Prime—top quality
2. U. S. Choice—high grade
3. U. S. Good—good grade
4. U. S. Commercial—lower grade
5. U. S. Utility—the last meat on the block
6. U. S. Cutter—boneless cuts
7. U. S. Canner—good only for sausage

All of these grades are good to eat, but the U. S. Utility is the lowest graded meat that is cut on the block or sold in a market.

**Preparation.** Little schooling or formal training is required for most jobs in meat-packing plants. Beginners who are unskilled learn under the direction of a foreman in less than 6 months. Because of the nature of the work, most people are not attracted to certain jobs in meat packing. As in all industries, however, the meat-packing industry offers desirable jobs in scientific and managerial fields and skilled jobs in cutting and processing, where workers are trained in the usual manner through schools or apprenticeship.



COURTESY KEMP BROTHERS PACKING CO.

**Sorters (8-04)** in the canning and preserving industry separate underripe or damaged fruits or vegetables not easily peeled because of size or irregularity of shape. These women check tomatoes as they pass along on the moving belt.

## CANNING AND PRESERVING

The ancients knew how to preserve food by drying it in the sun, smoking it, or covering it with salt. They knew nothing about canning foods. When Napoleon's soldiers in France became ill on a diet of hardtack and smoked meat, the government offered a \$5000 prize for the discovery of some process of preserving army food.

**Improved canning methods.** In 1809 Nicholas Appert won the prize by canning food in airtight glass jars in much the same manner that a house-

wife today cans fruits and vegetables in her kitchen. But glass jars were difficult to handle without breaking. In 1825 "canisters" (tin cans) were invented, and one man could make 60 tin cans by hand in one day. In 1874 the newly invented pressure cooker made possible our large canning plants. Thereafter followed a series of inventions of machines that could do the work of hundreds of employees: corn huskers, corn silk-ers, corn cutters, pea shellers, fruit peelers, can labelers, and many other ingenious machines. Operators of today's machines in a modern can-





COURTESY WOMEN'S BUREAU, U. S. DEPT. OF LABOR

**Packers (8-04)** are unskilled workers who learn the work quickly. These packers are filling bottles with olives by hand. Other products that are similarly packed by hand include beef, cherries, herring, oysters, pickles, etc., in bags, bottles, boxes, cans, or jars, or other containers.

ning plant are able to make and seal 100,000 cans a day.

**Size and location of the industry.** The 3826 canneries in the United States employ 202,000 workers. These canneries are located chiefly in California, Indiana, New York, Maryland, Illinois, Wisconsin, Pennsylvania, New Jersey, Washington, Oregon, Michigan, and Ohio—listed in descending order of number of workers. One-third of the entire canning business is done in California. Western packers can 90 per-

cent of the apricots, figs, fruit cocktail, grapes, lemon juice, olives, peaches, pears, and other small fruits. One-third of the canning business is in the Atlantic Coast states and one-third in the Great Lakes states. Eastern packers can 90 percent of the applesauce, grapefruit, raspberries, corn, beets, and red cherries. Many packers also put up condiments (spices), jellies, pickles, soups, clams, oysters, and shrimp.

**Nature of the work.** A canning factory is a noisy place in which to

work. Products start on the top floor and move down slowly by gravity, being processed on the way. Machines do most of the work of washing, peeling, sorting, and cutting of vegetables and fruits. Tomatoes, however, must be peeled by hand. Empty cans are washed with steam. Mechanical fillers place vegetables in cans, remove the air (vacuum packed), and seam the covers on tight. The closed cans are then processed, or cooked, cooled at once, and labeled by machine. Then the cans are ready for delivery.

Large canning factories provide more than 500 different occupations and employ three types of workers: (1) year-round workers, including managers and skilled foremen, who receive the highest pay; (2) semi-skilled workers, including cooks and machine operators, who are mostly local residents employed only during the busy rush seasons; and (3) unskilled workers, including sorters and peelers, who work during the rush seasons but are often hired on a temporary basis. Only 1 out of 10 workers in the canning industry is skilled. Two-thirds of the employees in canning factories are women who need no special skill for the work. Men do the heavy labor work of unloading, trucking, and stacking. They also do certain semiskilled technical work, such as cooking and maintaining the machines in good order.

**Jobs in canning and preserving.**  
The various divisions of the canning

and preserving industry require workers with different interests and abilities. For example, in the buying division, the *buyers* (0-91) inspect growers' crops and purchase tree-grown crops on the spot. In winter they may contract for next year's tomato crop.

At the receiving station, workers inspect, grade, weigh, and price raw foods. In the preparation division, women *sorters* (8-04) cull out defective foods, and *peelers* (8-04) remove skins and peels as they prepare foods for canning. Men who are unskilled laborers operate the washing machines to clean the fruits.

In the canning department, women *packers* (8-04) may place food in cans according to amount and grade, or machine operators may tend machines that do this work automatically. The open cans are then closed and sealed on a special machine, operated by men known as *double-seamer operators* (7-68).

In the cooking department, men lift the heavy containers with cranes so that the cans can be further processed. *Mixing-machine operators* (6-04) blend foods, and *cooker operators* (6-04) process the sealed cans a required length of time in steam for cooking the contents. Cooker operators are generally known by the product they cook, as *cook*, *apple butter* (6-04).

In the casing division, *machine labelers* (9-68), usually men, operate the machines that label the cans. The cans are then put into cases





COURTESY GENERAL FOODS CORP.

**A coffee-tin-capper-machine operator (9-68)** loads the magazine of a machine with tin tops or caps. The cans travel automatically into the vacuum chamber where two rollers crimp the tops to the cans.



(boxes) ready for shipment. The *warehouse foremen* (5-91) supervise the work of the personnel of the warehouse—labeling, packing, and storing cases and loading them into cars. A maintenance crew keeps the machines in good order.

Workers in the sales department take care of orders for delivery, and managers supervise the entire work of the plant. Foremen hire most of the workers in a canning factory.

Since most of the work in a canning factory is unskilled or semi-skilled, there are no special educational requirements. Most of the jobs require little schooling or experience because workers can learn on the job in a training period of 1 to 3 weeks.

**Frozen foods.** In recent years a new method of preserving foods—quick-freezing—has made inroads in the canning and preserving industry. In the 1920's Clarence Birdseye, while in Labrador when the temperature was 50 degrees below zero, caught a fish. The fish froze at once. When he got home some days later he put the fish in a pail of water to thaw out, and shortly after the fish began swimming about in the water. From this episode he discovered a new way to preserve foods by quick-freezing. Later Mr. Birdseye developed the frozen foods industry which has already changed the nation's cooking and eating habits. At first the industry developed around fish, poultry, and vegetables, but today more than 50 frozen foods are on the market all

year round. One-fifth of all poultry is now quick-frozen. In 1948-50, when oranges were low in price, the Florida citrus growers developed frozen orange juice and saved themselves from great losses by freezing 21 million gallons for the market. In California the lemon growers, who raise half of the nation's lemon crop, froze 2 million gallons of lemon juice. The frozen foods industry, however, is still small. In 1939 there were only 3300 workers in 61 plants. In 1947 there were 17,000 workers in 291 plants. These plants are engaged in the quick-freezing and cold-packing (freezing) of vegetables, fruits, fish, and shellfish. Not included in this count are plants primarily engaged in packing fruits and vegetables for freezing, but not freezing the product, or cold storage warehouses that freeze foods for others.

To retain their flavor, fruits and vegetables must be harvested when ripe, processed, and packed for freezing within a few hours. Vegetables must be washed, blanched (scalded in steam), and packed in airtight cartons. Some products are packed whole and others are peeled, sliced, or otherwise processed. When ready for freezing, the packaged products are loaded into a freezing machine tended by an operator. In the automatic process the operator closes the loading door by a push button. Steam is admitted for blanching for a certain time; the product is cooled and dropped into the freezing cham-



ber; and finally the product is dropped into a lower storage chamber. Because of the small number of workers engaged in freezing foods, occupational titles of workers and code numbers are not available in the *Dictionary of Occupational Titles*.

### BAKERY-PRODUCTS INDUSTRY

Women no longer take the time or trouble to bake bread at home when they can buy it as they need it at the bakers. We have become so accustomed to buying a loaf of bread that is already sliced and wrapped in waxed paper that we seldom think of the inventions and occupations that have made this convenience possible. The baking industry produces bread, biscuits, crackers, cakes, pies, and pastries, and it flourishes in every state.

**Progress in baking.** Until a hundred years ago all baking operations were done by hand. The Egyptians (3000 B. C.) learned to make leavened bread, and the Greeks (800 B. C.) first used the closed oven. In 400 B. C. the public baker of Athens won fame for his rolls. In 1200 A. D. the monks of Paris owned the bakeries, and housewives brought them the family dough to be baked in their ovens.

In Colonial America there were no bakers, and every housewife had to do her own baking. Thus, American mothers became good cooks with their brick ovens, and generations have praised "the pies that mother

used to make." In 1850 the kneading machine for mixing dough was invented. Later machines came into use to divide, weigh, and round the dough for bread loaves as we know them. New inventions include traveling ovens and machines to slice and wrap bread.

**Number of workers.** Three types of bakeries serve the consumer: (1) the large factory that bakes a variety of bread, biscuits, and cakes and sells them to the retail stores; (2) the small retail bakery that supplies baked goods directly to the consumer in any community; and (3) the hotel bakery in large hotels, where highly skilled bakers make fancy cakes, candied fruits, and bread and rolls by hand, particularly for use in the hotel dining rooms. Omitting bakeries managed by one person, the 1947 Census of Manufactures enumerated 7123 bakeries with one or more employees. These bakeries employed 279,000 bakery workers.

**Nature of the work.** What bakery workers do is better understood by following through their jobs in processing bread, etc., as it goes through a large factory. In general, preparing and mixing of ingredients and baking of products are similar for all kinds of baked products. From dumping the flour from the bags to loading the bread on delivery trucks, workers in bakeries are engaged in the following five different processes:

*Ingredient-preparation and mixing jobs.* Ingredients are brought



from storage to a central preparing station, measured and scaled, placed in a mechanical mixer in proper sequence, and mixed until the dough is of the right consistency. For example, the *dough mixer* (4-01) may specialize in bread, pastry, crackers, or pretzels. The *dough raiser* (6-02) raises the dough for three hours. Workers are usually required to have some bakery experience and be familiar with the processes. A few inexperienced workers may be hired to work under supervision.

*Forming and shaping jobs.* Making dough into round balls for the pans is called "rounding," or "molding." Raising these balls of dough for 10 minutes to an hour is called "proofing." This is semiskilled work. Shaping, forming, and panning of the dough or batter is the next process, and machines usually do this work. The *dividing-machine operator* (6-02) tends the dividing machine that cuts the dough and divides it into individual loaves.

*Oven jobs.* The products ready for the oven are baked, removed when done, and allowed to cool on racks or moving belts. The *ovenman* (4-01), a skilled worker, controls the baking of the products.

*Finishing and icing jobs.* The products are "finished" after baking to improve their appearance or taste—iced, filled, sweetened, decorated, etc. For example, the *enrobing-machine operator* (6-02) tends and regulates an automatic machine that sprays a chocolate coating on cookies.



COURTESY U. S. DEPT. OF AGRICULTURE, PHOTO BY OSBORNE

Girls who pack frozen foods work on an endless conveyor belt, along which the boxes are weighed to be sure that they are filled properly. As the boxes move along they are sealed, and when the filled, sealed boxes reach the end of the long table they are collected and taken to the freezing cabinet.



*Slicing and wrapping jobs.* When ready for the consumer, products are sliced and wrapped for sale. This may be done in one continuous machine operation. The *slicing-and-wrapping-machine operator* (6-02) tends a combination machine that automatically cuts loaves of bread into slices, and wraps the cut loaves in wax paper. He feeds the loaves of bread into the machine, and the machine slices them at the rate of 50 loaves a minute.

**Bakery opportunities.** Workers in slicing and wrapping are beginners but are seldom promoted to jobs in production. In the following jobs near ovens, workers are subjected to high temperatures, but little training is needed: *bread racker* (8-02), who stacks loaves of hot bread; *cracker inspector* (8-02), who inspects all baked crackers passing on a conveyor belt from the ovens; *dough feeder* (8-02), who feeds dough into hoppers of cooky or cracker machines; and *pretzel twister* (6-02), who twists strips of dough by hand into pretzels for baking.

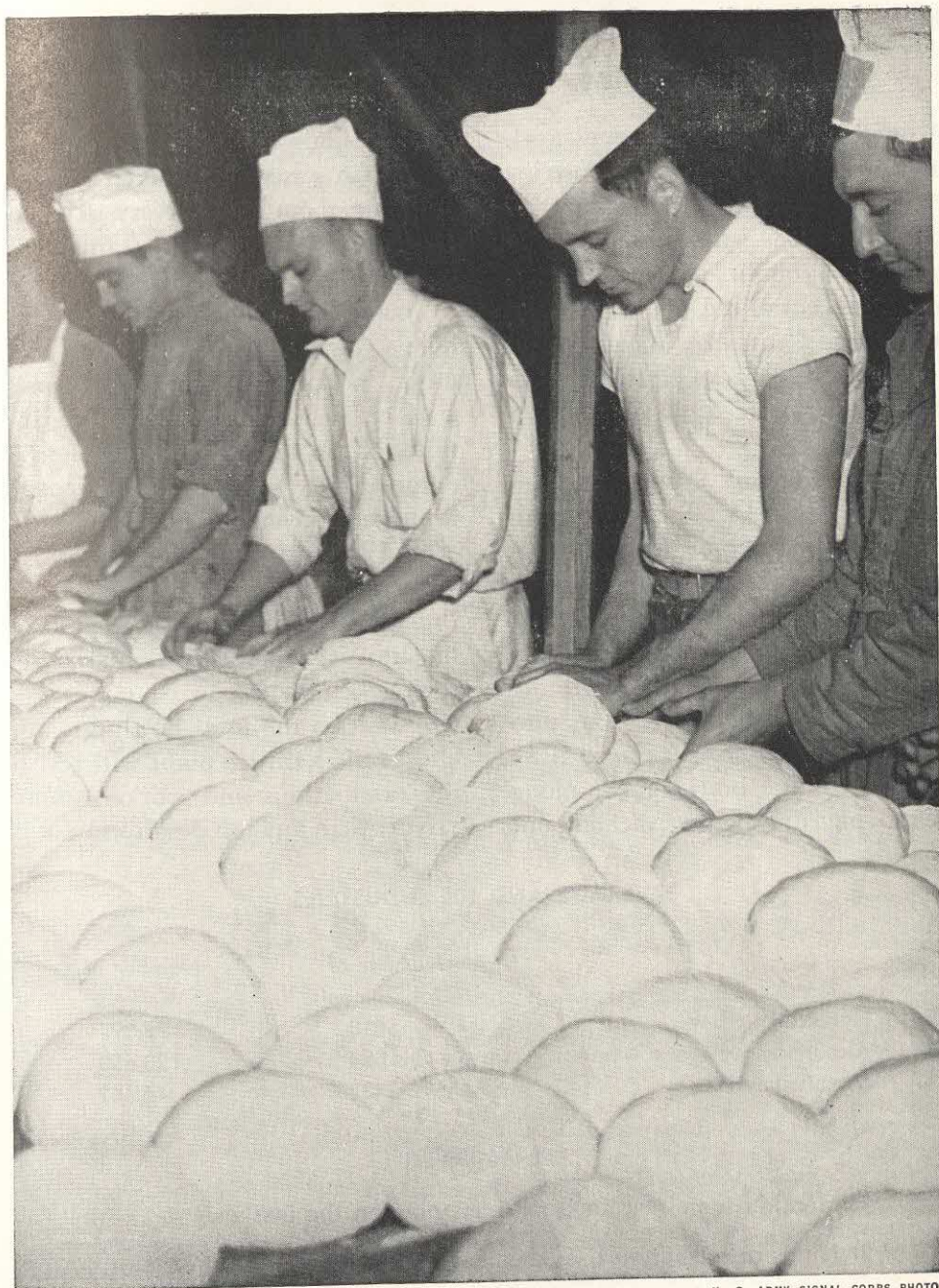
The mixers—that is, the bench hands who form the dough by hand—and the ovenmen, who bake the bread in the ovens, earn the highest pay because they are skilled and experienced workers.

**Preparation and employment.** There are no educational or technical training requirements for workers in a bakery, but employees must have food-handler certificates

and pass periodic physical examinations. Bakers generally learn their trade through apprenticeship in a small bakery where they have an opportunity to learn every step in the baking trade. An apprentice usually starts as a *pan greaser* and progresses after 2 to 4 years to a bench hand (mixer) or journeyman baker. Vocational schools for bakers take boys with grade school education. Many courses are less than a year in length. Baking schools are located in New York, Chicago, and Minneapolis. These schools train young men to become bakers, to sell baked goods, and to manage retail bakeries and bakery shops.

Retail bakeries and bread factories usually employ men. Both men and women of all ages are employed in cake and pie factories and in cracker and biscuit factories. Many operators tend machines in large specialty factories and wholesale bakeries. There is no seasonal unemployment in the baking industry because people use baked goods the year round. Because bread is usually baked at night to be sold fresh, employees may work from late afternoon until early morning hours. Night work and extremely long hours, however, have been largely eliminated since efficient machines have been introduced in the bakeries. A good baker can usually find a job readily in almost any community. Outside of the industry, bakers find work in hotels, in camps, in clubs, on steamships, and elsewhere.





U. S. ARMY SIGNAL CORPS PHOTO

**Bakers (4-01)** in the Army learn to bake bread for a multitude of hungry men. These bench hands are forming dough by hand prior to baking the loaves. In commercial bakeries young men learn to become bench hands on the job rather than through apprenticeship, but all-around bakers serve a 3-year apprenticeship.



### BEVERAGES AND ICE

A quarter of a million persons work in the beverage and ice industries. Nearly half of these workers are employed in 1084 establishments that produce alcoholic beverages; these are large centralized plants. According to the Census of Manufactures (1947), the number of establishments and workers were divided as shown below.

In the soft-drink industry, the local bottling works offers opportunities for young people to tend automatic machines. The sirup for soft drinks is manufactured in a central plant and sent to local bottling plants all over the United States. In the bottling works the sirup is put into automatic machines that need little tending. As the bottles move along on moving runways, an exact amount

of sirup is squirted into each bottle, and farther on carbonated water is added. Finally the bottles are capped, placed in cases, and taken to the shipping room for delivery. Return bottles are washed with steam.

Manufactured ice is likewise made in many local plants which serve hotels, restaurants, drug stores, and other concerns with block ice, crushed ice, and ice cubes. One innovation in the ice industry is the automatic ice vendor (slot machine) found at convenient places in large cities. At any time of the day or night a person may put 25 cents in the slot, and out slides a good-sized block of ice wrapped in paper ready to be taken home.

A visit to the local bottling plant and to the local ice plant will reveal the occupations and workers more vividly than any job description.

### BEVERAGE AND ICE INDUSTRIES

	<i>Number of Establishments</i>	<i>Number of Workers</i>
Nonalcoholic beverages	5618	79,397
Alcoholic liquors and wines	1084	120,653
Manufactured ice	3432	46,462

### For Discussion

1. Mention some new food products now on the market.
2. How are food industries classified by the Bureau of the Census?
3. Where are the large meat-packing plants located?
4. What different departments are maintained in meat-packing plants?
5. Describe briefly the activities in a meat-packing plant.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the food industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	With a plaster-of-Paris mixture and a pastry tube demonstrate the art of decorating a wedding cake, using a round cardboard box as a substitute for the cake.
<b>BUSINESS:</b>	Collect newspaper ads of local grocery stores. Find the low-priced "come-on" items, and discuss their use in attracting customers.
<b>ENGLISH:</b>	Write slogans for food advertisements.
<b>HEALTH:</b>	Explain the pasteurizing of milk as a health measure.
<b>HOME ECONOMICS:</b>	In awarding a prize for the best cake (or other food product) submitted at a food fair, what criteria do the judges apply?
<b>LANGUAGES:</b>	Bring to class a French menu and interpret it. Why do many French items appear on American menus?
<b>MATHEMATICS:</b>	Figure the best value at the local current price of one pound each of fresh peas, canned peas, and quick-frozen peas.
<b>MUSIC:</b>	Discuss the following saying and tell how it is put into effect: "I like music with my meals."
<b>OCCUPATIONS:</b>	In your community what foods are raised for market, canned for sale, or quick-frozen commercially? Which provide year-round employment opportunities?
<b>SCIENCE:</b>	Demonstrate in the laboratory why bread rises, how "soda pop" is made, what "Dry Ice" is, or how the pressure cooker works.
<b>SHOPWORK:</b>	Explain how tin cans are manufactured for the food industries.
<b>SOCIAL STUDIES:</b>	Explain how the discovery of preserving foods by canning led to the growth of the food industries.



6. What seven grades of meat are sold in meat markets?
7. How did the canning and preserving industry originate?
8. Where are most canneries located?
9. Describe briefly some of the jobs in the canning and preserving industry.
10. Tell about the frozen foods industry.
11. What are five processes of making products in the bakery industry?
12. Visit a local bottling plant or an ice plant, and describe the kinds of jobs done by the workers.

### What to Read

- The Baking Industry*, Mary K. Moore. Bellman Publishing Co., Cambridge, Mass., 1946. 32 p.
- Establishing and Operating a Grocery Store*, U.S. Department of Commerce, Industrial Series No. 21. U.S. Government Printing Office, Washington 25, D.C., 1946. 375 p. (55 cents)
- Establishing and Operating a Retail Bakery*, U.S. Department of Commerce, Industrial Series No. 29. U.S. Government Printing Office, Washington 25, D.C., 1946. 176 p. (35 cents)
- The Grocery Business*. Small Business Advisory Service, Bank of America, 300 Montgomery St., San Francisco 20, 1948. 22 p. (Free)
- Job Descriptions for the Bakery Products Industry*, U.S. Employment Service. U.S. Government Printing Office, Washington 25, D.C., 1939. 347 p. (\$1.00)
- Meat Packing Industry*, Edwin L. Heckler. Bellman Publishing Co., Cambridge, Mass., 1944. 23 p.
- The Story of Food Preservation*, Edith Elliott Swank. H. J. Heinz Co., Pittsburgh, 1943. 96 p. (Free)

## CHAPTER 29 THE IRON AND STEEL INDUSTRY

From hairpins to skyscrapers, steel is indispensable in our daily life. Steel is the most valuable form of iron, and the backbone of our modern civilization. For all practical purposes, it is more important than gold because it is our strongest metal for construction. Without structural steel, our tallest buildings would crumble, our longest bridges would collapse, and our tunnels and subways would cave in.

**Importance of the steel industry.** Steel leads other industries in the United States in both the number of wage earners and the value of its products. The production of steel is considered as one of the barometers for all business activity. When steel production is up, business is good; when steel production is down, business slumps.

The industry is concentrated in about 400 basic iron and steel plants scattered throughout the country, especially near the coal-mining areas. Important steel centers include Gary, Indiana; Pittsburgh, Pennsylvania; Birmingham, Alabama; Youngstown, Ohio; Bethlehem and Aliquippa, Pennsylvania. Although two-fifths of the steel workers in the

country are employed in Pennsylvania, every important city in the United States has foundries, steel works, or rolling mills.

More than one-third of the steel-producing capacity in this country is owned by the U. S. Steel Corporation, known as "Big Steel." "Little Steel" companies—including Bethlehem Steel Corporation, owning 13 percent, and Republic Steel Corporation, owning 9 percent—make up the rest of the steel industry.

**Working conditions.** Contrary to what might be supposed, the steel industry is the *fifth safest* major industry in the United States. It is said that fewer accidents occur in the average steel plant than on the city streets, and occupational diseases in the industry are rare. The chief hazards are the effects of rapid changes from furnace heat to outside air, burns, noises, and injuries from falling objects.

Steel occupations are essentially men's work. Women are employed mainly in the plant offices, but during World War II they performed valuable service in all departments of steel production. By the end of the war 40 percent of the women in



the steel industry were working in the rolling mills.

The steel industry employs men and women in all occupational classifications. Of the half a million workers employed, it has been estimated that 9 percent work in the offices. Professional workers include *metallurgists, accountants, engineers, doctors, lawyers, librarians, social workers*, and various specialists. At the skilled level, workers must have years of experience in the industry. One-fourth of the workers are skilled steel men who, through experience, know the condition of melted steel when they observe it or who can manage a crew in a rolling mill. Semiskilled employees represent one-fourth of the workers, including those who do such work as operating levers and pouring melted metal. They also must have had experience for their jobs. Unskilled workers in the industry—approximately one-half of the employees—are the strong men who are physically able to do hard labor. They advance in the industry according to their abilities.

Most new workers in production enter the industry as laborers. Steel companies generally prefer young men because they are usually easier to train on the job. Most of the new workers are employed in the steel works and rolling mills, although 5 percent find work on the blast furnaces where experienced employees are needed. Related industries in industrial towns furnish employment to many men in foundries and plants

to produce castings, automobile parts, machine tools, wire fencing, and other steel products. These industries use *blacksmiths, furnace-men, smeltermen, machinists, tool makers, molders, founders and casters, patternmakers, rollers, and roll hands*.

**Union affiliation.** Because the steel industry is unionized, steelworkers have been able to bargain collectively to obtain higher wages, better working conditions, and job security. Most steelworkers are organized in the CIO United Steel Workers of America and pay an initiation fee and monthly local dues. If a reduction in the number of employees becomes necessary, consideration is given to the following factors, which also govern promotions and rehiring of workers: (1) length of continuous service; (2) knowledge, training, ability, skill, and efficiency; (3) physical fitness; (4) family status and dependents; and (5) place of residence.

**Preparation for employment.** Those who desire to enter the steel industry usually do so through the apprenticeship programs which require  $1\frac{1}{2}$  to 4 years to complete. Such programs are usually available in most steel plants. Wage rates for these learners must be at least half the rate paid skilled workers but are often higher.

Most jobs in a steel plant do not require high school graduation, but the companies prefer those with some education in chemistry, physics, and mechanics. A technical training

is desirable because operators who tend automatic machines must understand how to get the most out of their machines. A machine of any kind is only as good as its operator.

For adult workers, several types of training programs have been undertaken. "Vestibule training" helps new employees learn how to use materials, machinery, and processes before being put on production. In "progressive job training" the worker learns the simplest methods connected with his job and progresses to the more complicated processes. "Foreman training" emphasizes personnel methods, safety, and leadership. Workers on "training-on-own-time with a company-paid instructor" improve their technical knowledge of necessary subjects.

For professional and managerial jobs in the steel industry, college training is usually required, unless a person has an unusual background of experience in place of such training. Early experience in the industry is believed to be excellent preparation for any steel job, whether professional or skilled.

**Types of plants.** The steel industry maintains four types of plants: (1) plants that produce pig iron only; (2) plants of small firms that produce hot-rolled products only; (3) plants that specialize in steel ingots and hot-rolled products only; and (4) plants of large corporations that are engaged in all steel processes. To understand what workers in the steel industry do, it is necessary to under-

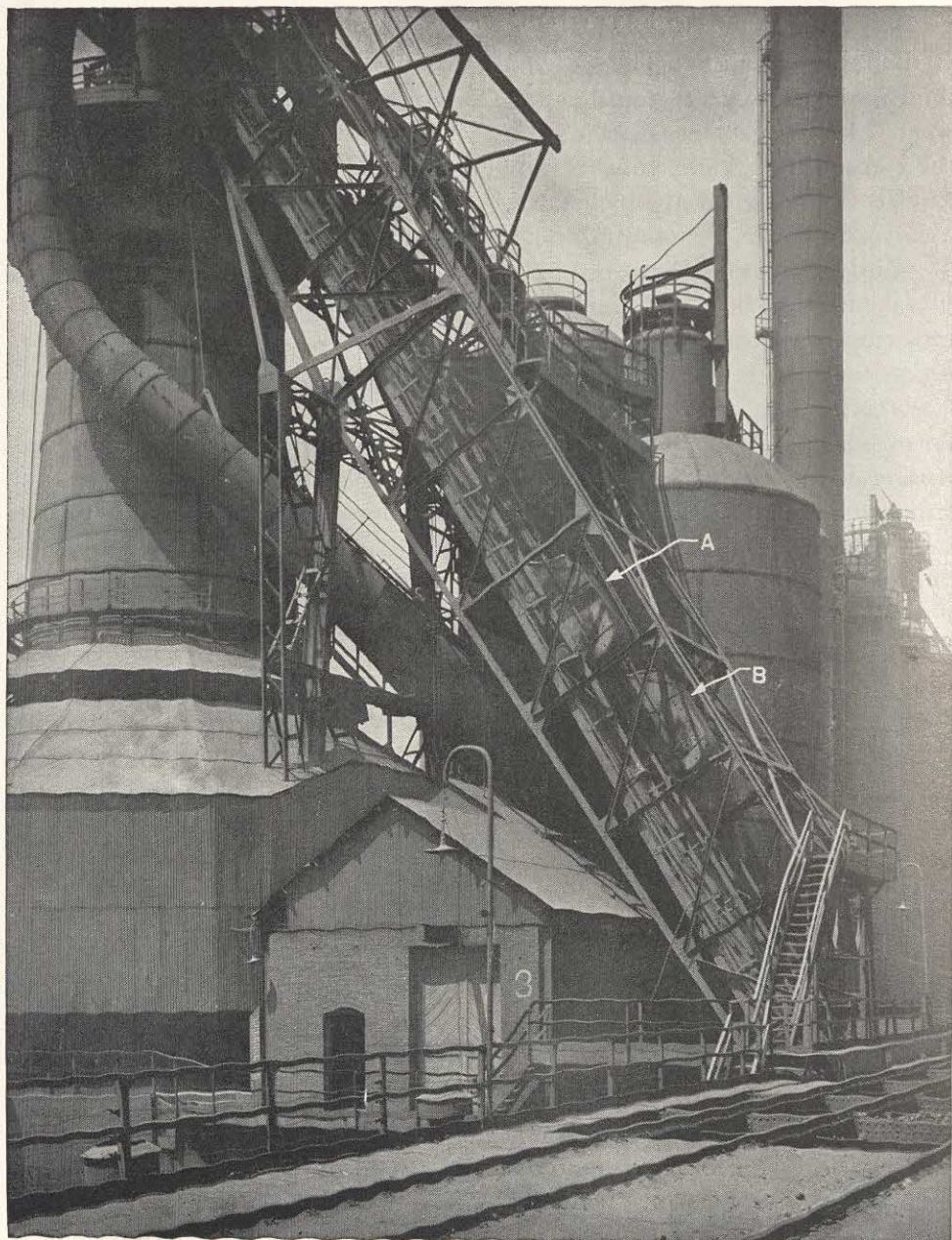
stand some of the processes through which steel is produced. Therefore, the processes and the jobs of the workers are briefly described in the four sections that follow: (1) Preparing Pig Iron, (2) Making Castings, (3) Making Steel, and (4) Rolling Steel.

### PREPARING PIG IRON

**Mining iron ore.** Steel is made from iron rust, and therefore our country's prosperity depends upon the amount of iron rust that we can reclaim from the earth. Atoms of iron, concentrated deep down in the earth, are brought to the surface by natural forces to form veins of iron ore. Some deposits have accumulated under the sod so that steam shovels can scoop up the iron ore and transport it to steel plants for processing. Some open pits are called "strip" mines. "Shaft" mining goes on where the deposits are far beneath the surface. Millions of tons of iron ore are stored in the ground.

Iron-ore mines are located chiefly in Minnesota, Michigan, and Wisconsin. The "Mesabi Range" in Minnesota is world famous for its iron ores. The ore, transported by rail, reaches the loading docks on Lake Superior. Specially constructed ore boats then carry it to the ports on the Great Lakes. Again it is transported to the coke furnaces for conversion into "pig" iron. No cheap method has yet been found to extract iron for commercial use.





COURTESY CARNEGIE-ILLINOIS STEEL CORP.

Smelting takes place in blast furnaces, which are filled from the top by "skip cars" (elevators). Note the empty car (A) coming down passing the loaded car (B) going up. A skip operator (5-73) loads ore, coke, and limestone into the skip cars on the incline. Automatic equipment causes the car to deposit the raw materials in the top of the furnace for smelting.



**Smelting ore.** The problem of obtaining iron from iron ore was solved long ago by the discovery of smelting. Smelting is a process of melting down the ore by intense heat. Intense heat is produced by blowing blasts of air into live coals.

To produce iron from iron ore, it is necessary to have coke and limestone, both of which are cheap and plentiful. Coke is the fuel for the furnace. Limestone, thrown into a hot furnace with iron ore, unites with the impurities to form a slag. The slag floats on the surface of the molten iron and is skimmed off.

Smelting takes place in the blast furnaces. These large tubelike steel towers rise a hundred feet into the air and are lined with firebrick. They are readily identified in pictures of steel plants. Nearby, rounded "stoves" heat currents of air, which are then forced through the furnaces to produce the high temperatures necessary. The furnaces are loaded by "skip cars" (elevators) that carry exact amounts of raw materials to the top of the furnace and dump them in automatically.

**What the workers do.** The blast-furnace crew takes charge of the first step in steel production—converting iron ore into iron by smelting it at very high temperatures. *Stock men* (8-92) in the yard prepare the raw materials. The *weighers-up* (6-92) measure exact amounts of each kind of material into scale cars. *Skip operators* (5-73) control the skip cars that feed the furnaces. *Blowers*

(5-92) supervise charging and tapping the furnace, as well as the pressure and temperature of the hot blast. *Blowing engineers* (5-72) and their assistants regulate the pressure of the blast. The molten iron, being heavier than the mass, remains at the bottom of the furnace, ready to be poured like any fluid. It is tapped (drawn off) every 4 or 5 hours to be cast into molds in the same manner that gelatin can be molded.

Supervised by the blowers, the *keepers* have charge of the casting crews and supervise the tapping of the metal and slag. In old processes the liquid pig iron was tapped and allowed to run in channels in the dirt floor to be cast in beds of sand. More often today, casting machines are used to pour an endless chain of moving molds. *Hot-metal-crane operators* (5-73) direct the flow of iron into huge ladles. From the ladles it is poured into pig-casting machines or into ladle cars that go directly to the steel furnaces. *Metal pourers* (6-91) control the pouring of the metal into the pig-machine molds. *Mold coolers* (8-92) spray water on the molds to cool them as they move along. At the proper point the solidified pieces of pig iron, called "ingots," fall into a waiting car. In the picture on page 475 ingot molds are being filled.

All of these workers make pig iron to be used for casting in foundries or for making steel. Great quantities of pig iron are sold to foundries for casting into shapes and to small steel mills for refining to make steel.



## MAKING CASTINGS

**What foundry workers do.** In a job foundry, workers must be prepared for any kind of job and, therefore, exercise a considerable amount of independent judgment. In production foundries, workers are engaged in mass production of certain items. Briefly, these workers charge (load) the furnaces with raw materials—pig iron, scrap, and coke—weighed accurately according to the metallurgist's formula. The *metallurgist* (0-14) is a professional engineer who produces metals and alloys and determines their uses. *Pourers* (6-91) pour the molten metal into molds to harden. The casting is finally knocked out of the mold, cleaned by *chippers* (6-82), and inspected.

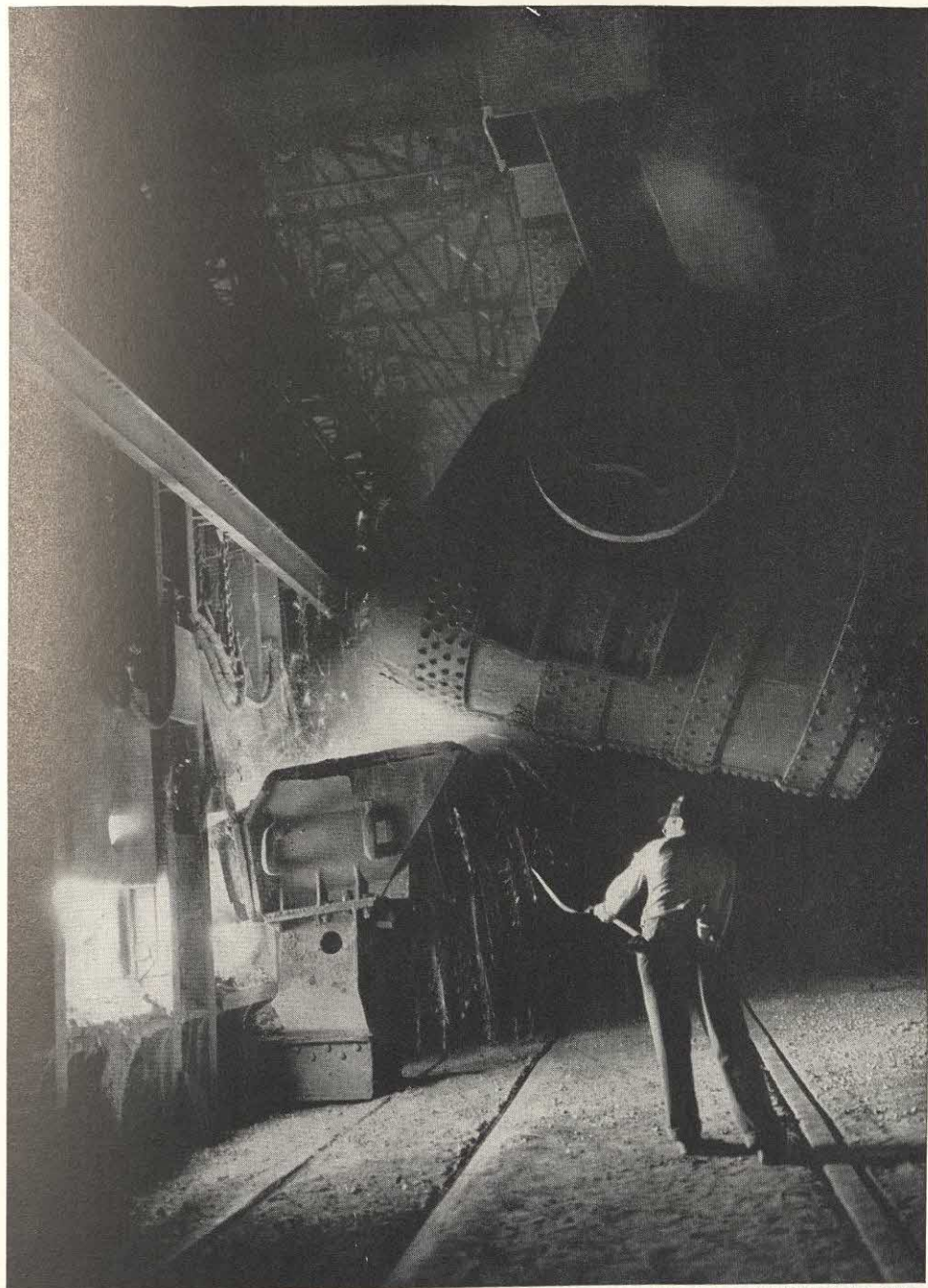
Models called patterns are used for making the molds. The *pattern-maker* (5-17), a skilled craftsman, makes the wooden or metal patterns of castings from drawings. The pattern is placed in the molding frame full of sand. The sand is rammed around the pattern, and the pattern is carefully removed, leaving a hole in the sand (the mold) to be filled with metal. *Bench molders* (4-81) are the highly skilled craftsmen who prepare the sand molds into which the metal is poured. Most *machine molders* (6-81), semiskilled workers, operate a machine that makes many identical molds. *Coremakers* (6-82) are semiskilled men who shape cores of sand to be placed inside the molds to make hollow castings.

**Foundry opportunities and working conditions.** For entry jobs in the foundries, employers prefer young men who are willing and able to do hard work. Molders and pattern-makers are older men—35 to 50 years of age. Weekly earnings generally range from \$50 to \$60, and wages in foundries compare favorably with wages in other metalworking industries. Every state has foundry workers, but Ohio, Pennsylvania, Illinois, and Michigan have the most. Foundries are most often located near the source of supply of pig iron, coke, etc. Accident rates are high, and workers must perform their tasks in an atmosphere of noise, dust, dirt, and moving objects.

## MAKING STEEL

Steel is made from pig iron which must be refined because pig iron is impure, brittle, and has little strength. The refining process is carried on by three different methods. Special crews use three different types of furnaces: (1) the open-hearth furnaces, which produce 89 percent of our steel; (2) the Bessemer converters, which produce 6 percent of our steel, mostly for machining and welding steels; and (3) the electric furnaces, which produce 5 percent of our steel, particularly steel for high-quality tools and fine instruments.

**The open-hearth crew.** Workers in the crew that tends the open-hearth furnace are skilled or semiskilled.



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**The charging-machine operator (6-54) charges the open-hearth furnace with limestone ore and steel scrap to make steel. When this has melted he adds hot liquid pig iron from the great ladle. The ladle holds 100 tons.**



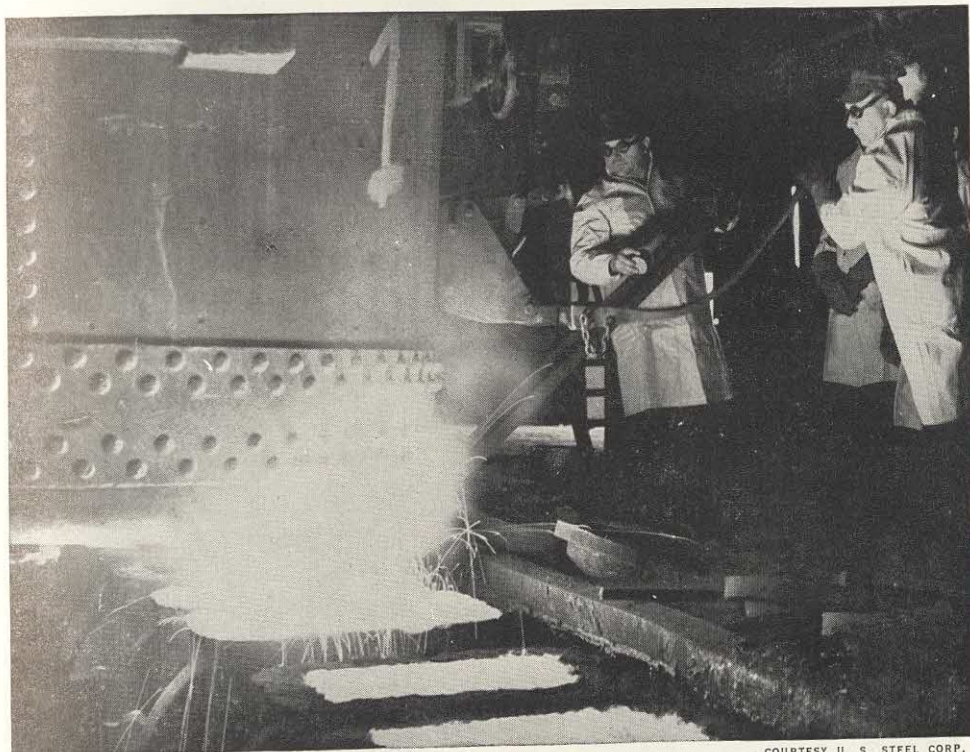


COURTESY CARNEGIE-ILLINOIS STEEL CORP.

**The melter (4-91)** observes the melted bath of steel in an open-hearth furnace through a peep-hole to determine when the steel is ready to pour. He is a skilled worker because he knows the melting process with respect to steel quality, slag, fuel, and temperatures.

The crew runs a small electric car alongside the furnace. The car carries a giant ladle into which the *crane operator* (5-73) dumps a load of pig iron, scrap, and alloys. The *car operator* (5-73) runs the car to the furnace door and tilts the ladle to deposit the charge in the furnace, as *laborers* (8-92) open and shut the sliding furnace doors. *Melters* (4-91) with helpers and *furnace tenders* (4-91) control the amount of each

substance that goes into the furnace, as directed by the laboratory. The *smelter foreman* (5-92) watches the progress of the molten metal through a peep-hole in the furnace. He wears dark glasses to protect his eyes from the intense white glare. When he decides that the contents of the furnace are properly melted, he takes out a small ladle of the metal for the *chemist* (0-07) to analyze. In a few minutes the chemist returns his report,



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The **first ladle man (4-91)**, or steel pourer, (*right*) pulls the lever to lift the stopper in the bottom of the ladle and allow the molten steel to flow into the ingot mold until the mold is filled to proper height. The rate of pouring affects the composition of the resulting steel. The **second ladle man (6-91)** is assisting.

and if the "melt" is not up to specifications, the foreman adds whatever is necessary. The molten steel is then drained from the furnace into a huge ladle ready for pouring into molds.

Steel-ingot cars (flat cars carrying molds) wait on tracks nearby. The ladle on an overhead crane operated by a *pit craneman (5-73)* is swung around to the cars. *Pourers (6-91)* remove the stopper from the bottom of the ladle and fill the molds with the liquid steel. *Mold cappers (6-91)* then cover the tops of the molds

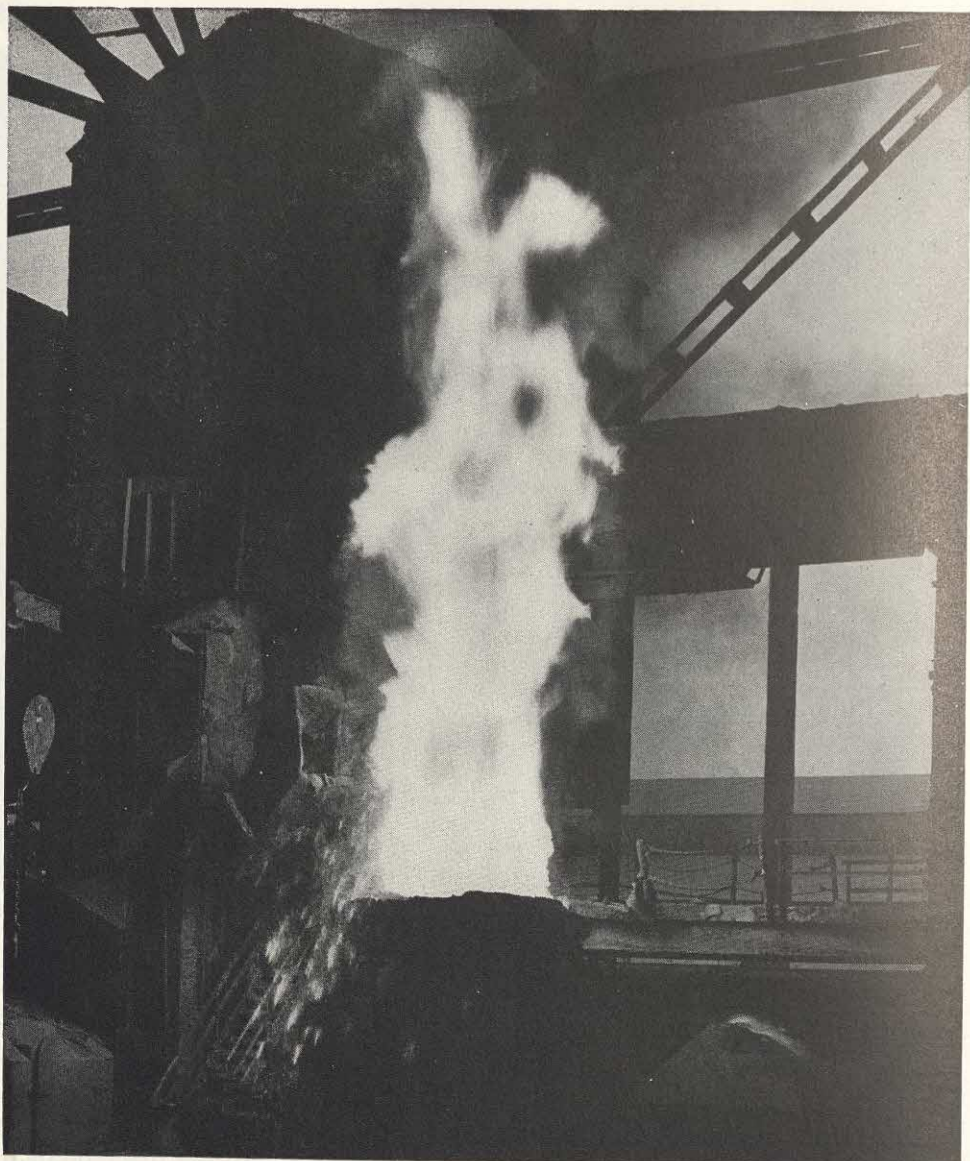
to prevent oxidation with the air.

When the liquid steel has solidified, *ingot strippers (5-73)* operate a machine to strip the sides of the mold off the ingot, leaving the red-hot ingot to cool. Ingots—the first solid form that steel takes—may be of any size or shape. Many are formed for flattening out under the rollers of a rolling mill.

#### **Bessemer production workers.**

Skilled steel workers also use a Bessemer converter for refining pig iron. This pear-shaped tilting vessel holds





COURTESY U. S. STEEL CORP.

Flames shooting skyward from a Bessemer converter are a colorful sight, especially at night when the blow resembles a spectacular fireworks display visible for many miles. Every nine to twelve minutes this vessel pours forth 25 tons of molten pig iron. Compressed air, fed through pipes in the base of the converter, blows the molten charge of metal into flame. This fire burns off various impurities in the form of oxides. First off is silicon, next manganese, and then carbon. The **Bessemer-converter blower (5-92)** supervises the operation. Steel blowers operate the converter from an enclosed pulpit at a safe distance.

as much as 20 tons of molten pig iron at one time. A blast of air directed into the red-hot liquid pig iron causes the carbon and impurities to burn out, leaving only the molten iron in a pure state. No external fuel is necessary. The burning-out process, requiring less than 15 minutes, is called a "blow." The blow is similar to a display of fireworks which lights up a night sky. After the blow has died down, an exact amount of carbon is added to make "soft steel."

For "hard steel," more carbon is added. The crew that handles these tasks has duties similar to those of the open-hearth crew. *Melters* (4-91) determine the composition of the charge. *Bessemer-converter blowers* (5-92) decide when the steel is ready for tapping. *Helpers and laborers* (8-92) do the loading and many of the jobs that require pushing or pulling levers.

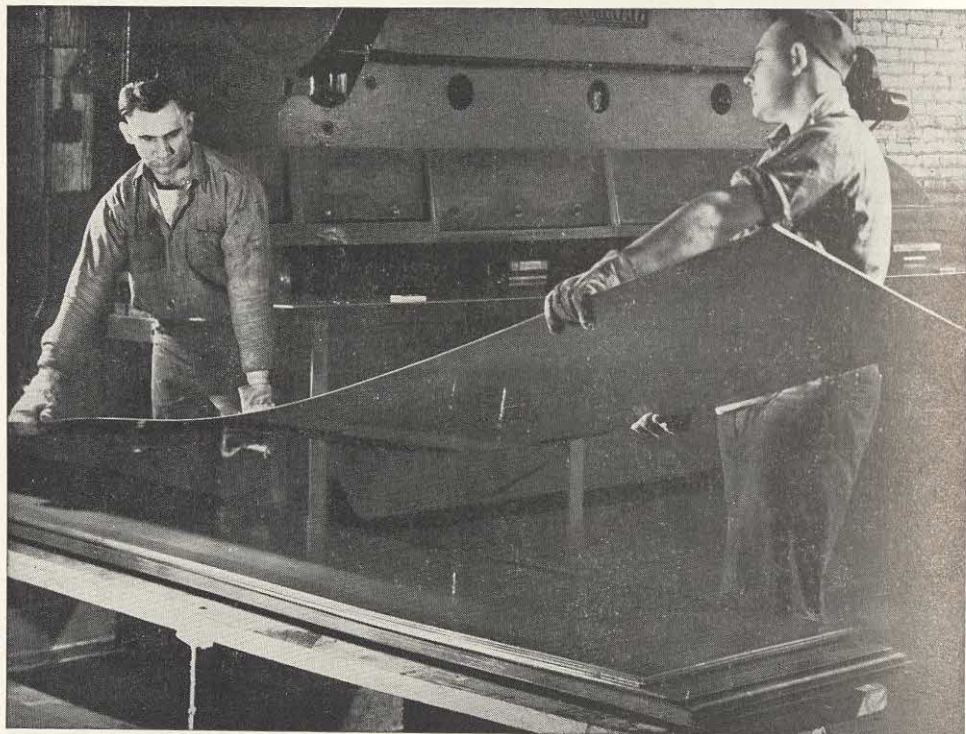
**Electric furnace workers.** A very small proportion of the workers in the steel industry work with electric furnaces. Electrical controls allow the melting and refining of steel to be closely regulated. A skilled steel man, the *electric furnace melter* (4-91), has charge of this work and operates the furnace, using various switches and levers to control the electric current. Only high-grade and high-priced alloy steels and stainless steels are made in the electric furnace. Such steel is used for polished products, including fine cutlery and machines.

## ROLLING STEEL

Steel products can be forged (hammered) or pressed into shape. Steel can be flattened or rolled under pressure like dough under a rolling pin. In the rolling mill, steel is rolled into many shapes, including sheets, plates, and rails. *Pit cranemen*, or *hot-metal-crane operators* (5-73), operate a crane to take the steel ingots to a furnace called a "soaking pit," where the ingots are "soaked with heat." Skilled *heaters* (4-88) regulate the heat and bring the ingots to a uniform temperature for rolling.

**Rolling workers.** The process of rolling, or squeezing the steel ingots through heavy rollers in the mill, is known as "rolling a bloom." The mill-control operator, called a *pulpit man* (4-88), handles the complex controls to start or stop motors that drive the huge rollers as the steel is being reduced to a certain thickness. The rolling crew is in charge of *rollers* (5-92), highly skilled craftsmen who judge the proper rolling temperature, know how to work steel, and are responsible for the quality of the finished product. *Stranders* (6-88), or *sheet catchers*, use tongs to feed the steel from one set of rollers to the next. *Hot-mill engineers* (5-72) (skilled) operate the engines that furnish power for the rollers. Finally, the rolled ingots are cut into shorter lengths for easier handling by *power-shear operators* (6-88) in the shearing crew. Records of the





COURTESY WESTINGHOUSE

In a rolling mill steel is flattened or rolled under pressure like dough under a rolling pin. These steel sheets have been rolled out in one piece, ready to be made into the top and sides of a refrigerator. (See opposite page.)

amount of finished steel from each ingot and of total production of the mill are kept by clerks as in any business. *Inspectors* (6-88) look for imperfections in the steel produced. As in all parts of the mill, unskilled workers and *laborers* (8-92) do the heaviest work.

**Rolling mills.** In 1922 the American Rolling Mill Company built the first "continuous mill" at Ashland, Kentucky. Since the perfection of the continuous mill, many processes of rolling are automatically combined into one effort. The steel moves con-

tinuously in one direction. It may enter one end of the mill as an ingot and come out at the other end as a sheet of steel for an automobile. Although the tonnage capacity of these mills is very large, fewer steel workers are required to operate these automatic machines.

On your next opportunity inspect a "tin can" from your kitchen. It is a product of the rolling mill. Actually tin cans are "steel cans" made from sheet steel. In the rolling mill large sheets of steel—first hot-rolled and then cold-rolled—are dipped in



COURTESY WESTINGHOUSE

The refrigerator begins to take shape after the sheets of steel (see *opposite page*) have been formed into the top and sides of the box. Here a steel worker is gaging the rounded top for accuracy.

molten tin to protect the metal from rusting and the food products in the can from turning dark. The steel sheets are polished to a mirror finish, and inspectors check the sheets for any flaws. The tin-can manufacturers take one-twelfth of the entire steel output and are the fourth largest consumers of steel.

Rolling mills produce steel in a large number of shapes: steel plates for ships, tanks, locomotives, and bridges; structural shapes, such as I beams for the construction industry; rails for railroad tracks; steel pipe, wire, and sheet steel for making buckets, automobile tops, kitchen ranges, and refrigerators.

#### For Discussion

1. What are the important steel centers in the United States?
2. Discuss working conditions in the steel industry.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the iron and steel industry.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	Make an exhibit of well-designed articles of stainless steel, such as costume jewelry, watches, tableware, bowls, etc.
BUSINESS:	Discuss the relationship between the price of iron and steel and general business conditions.
ENGLISH:	Look up and tell about the contributions to the steel industry made by the following men: Sir Henry Bessemer, Andrew Carnegie, Henry Frick.
HEALTH:	Compare the health-and-accident rates of steelworkers with workers in other heavy industries.
HOME ECONOMICS:	Arrange an exhibit of tin cans (steel products), according to standard sizes, and compare volumes.
LANGUAGES:	Make a report on the manufacture of steel in some other country—France, India, etc.
MATHEMATICS:	Obtain a current copy of <i>Survey of Current Business</i> from the Department of Commerce, Washington, D. C., or a similar business magazine, and interpret the graph on steel-ingot production over a period of years.
MUSIC:	In what ways is steel used in making musical instruments?
OCCUPATIONS:	Plan a visit to your nearest iron foundry or steel plant and report on the nature of the work that you observed.
SCIENCE:	Demonstrate the use of alloys in chemistry. Exhibit structural steel shapes in physics—I rails, etc.
SHOPWORK:	Discuss opportunities for shopwork in the iron and steel industry.
SOCIAL STUDIES:	Discuss the reasons why steel is a business indicator of the nation.

3. In the steel industry, what governs promotions, reduction in employees, and rehiring?
4. How does a man prepare for employment in the steel industry?
5. Name four types of steel plants.
6. How is iron ore mined and smelted?
7. Tell how workers produce pig iron.
8. What do foundry workers do?
9. In making steel, what three types of furnaces are used?
10. What do workers in a rolling mill do?
11. What is a continuous mill?

#### What to Read

*Careers in the Steel Industry*, Burr W. Leyson. E. P. Dutton & Co., Inc., New York, 1945. 191 p.

*Iron and Steel* (An elementary science reader). WPA Pennsylvania Writers' Project. Albert Whitman & Company, Chicago, 1944. 45 p.

*Job Guide*, Sydney H. Kasper, editor. Public Affairs Press, Washington, D.C., 1945. 193 p.

*Occupational Outlook Handbook*. Bureau of Labor Statistics Bulletin 998. U.S. Government Printing Office, Washington 25, D.C., 1951. 574 p. (\$3.00) (See pages 243-258, "Iron and Steel Manufacturing Occupations.")

*Steel Industry*, Josephine Perry. Longmans, Green & Co., Inc., New York, 1943. 126 p.



## CHAPTER 30 THE PRINTING INDUSTRY

Imagine having to pay \$35,000 for a book! That price, one of the highest ever offered for a book, was paid for the 42-line Latin Bible printed by Johann Gutenberg in 1456 at Mainz, Germany. This bible, one of three perfect copies existing, is on exhibition at the Library of Congress, Washington, D. C.

The chief importance of the Gutenberg Bible lies in the fact that it was one of the first books printed from "movable type." In movable type there is just *one* letter on each piece of type, so that the letters may be placed in whatever order is necessary to form words and sentences. After being used once in printing, the type can be separated and used again in different combinations. The Chinese also claim to be the first to use movable type for printing.

**Printing progress.** Gutenberg made his historic printing press out of an old wooden wine press. In this press he lined up single letters of type which he inked by hand, using ink on balls of wool and leather. Over the inked type he placed a sheet of moist paper and over this a smooth board, now called a "platen." The paper was squeezed against the

inked type as he screwed down the press. After releasing the screw, he removed the printed sheet and hung it up to dry. Thus Gutenberg created one of the world's most important inventions—printing from movable type.

Before Gutenberg's invention, books were rare and costly luxuries. Usually lettered by hand by patient monks, books were preserved only in the scanty libraries of palaces and monasteries. The invention of movable type brought the treasures of knowledge to all the people. Thus at small cost it became possible for everyone to enjoy books, periodicals, and finally daily newspapers.

Soon printing spread rapidly to leading cities everywhere. It was introduced at Oxford, England, in 1471. The first printing press in the Western Hemisphere was set up in Mexico City in 1539. In 1638 the first wooden printing press in the United States was set up at Harvard College, and on it Stephen Daye printed *Pierce's Almanac*. For the next 200 years, wooden printing presses were used in publishing.

Iron printing presses, which replaced the old wooden ones more

than a hundred years ago, revolutionized the printing industry. In 1833 the *New York Sun*, a forerunner of our modern newspapers, was run off on iron presses at a rate of 400 copies an hour. With present high speeds, modern presses turn out a 32-page newspaper at the rate of 50,000 copies or more an hour.

**Current outlook.** The printing business is now one of our major industries, with 29,000 printing plants and 715,000 employees. The industry flourishes in every state, the production of newspapers ranking first in quantity of output, followed by job printing, periodicals, and books. Half of the large plants are concentrated in New York, Pennsylvania, Illinois, California, and Ohio. In value of output, the plants in New York and Chicago alone account for one-third of the newspapers and two-fifths of the books and job printing produced in the United States.

The largest printing plant in the country is the United States Government Printing Office at Washington, D. C. This big plant covers acres of floor space and maintains hundreds of all types of typesetting machines and printing presses. In the Government Printing Office, as in other large plants, workers in special departments use special machines and equipment for each job process.

A printer may own and operate his own shop and print any job that is not too large or too complicated. In rural areas many small plants publish small country newspapers.

Workers in the printing industry are among the highest-paid workers in any industry. Union wage scales average about \$2 an hour. A large proportion of the workers are highly skilled.

Working conditions in most shops are reasonably good, and printers for the most part are a healthy group. Few industrial accidents occur, and most of those that do happen result when men are working around the presses in the pressroom. The work is not seasonal but continuous throughout the year, and, therefore, unemployment is not so big a factor as in some other industries.

Opportunities for advancement are good. An ambitious boy with intelligence and ability may become a skilled worker in a few years. High school graduates are preferred, and workers must have a good knowledge of grammar, spelling, and punctuation. Those who enter the trade should be between 18 and 30 years of age. Beginners usually specialize in some particular branch of printing, such as work in the composing room, pressroom, or engraving department.

#### **Preparation for the printing industry.**

Occupations in the printing industry are learned through apprenticeship. Students who have had courses in printing in the public vocational schools often have a better chance to enter the industry as apprentices than boys who have no knowledge of printing. Vocational schools in large cities offer training opportunities in



the printing trades but do not aim to turn out skilled printers.

Since the printing trades are highly unionized, uniform minimum standards for apprenticeship are established through extensive provisions in the constitutions of the international unions. Union shops limit the number of learners. Local unions usually determine the ratios of apprentices to experienced union workers. The most common ratio is one apprentice to four or five skilled workers.

To begin as a printer's apprentice, one must be at least 16 years of age and have had at least an eighth-grade education. Most young workers in the printing industry begin as printers' boys, or "printers' devils." They do whatever tasks are assigned to them and learn their jobs under close supervision as they work. Union apprenticeship regulations, however, vary from 4 to 6 years of service, depending upon the section of the country. By the union constitution, an apprentice must serve 5 years to become a stereotyper, electrotyper, or pressman. Photoengravers and members of the Typographical Union have 6-year apprenticeship terms. Bookbinders must have 4 years, and bindery women must serve at least 1 year's apprenticeship.

**Union affiliation.** Most printers belong to unions. About 82,000 workers are members of the International Typographical Union (AFL), and 65,000 are members of the International Printing Pressmen's and As-

sistants' Union of North America (AFL). The employers' organization is the United Typotheae of America.

Although the printing industry offers opportunities for work in the offices or on the sales force, descriptions of workers and processes that follow in this chapter are confined to jobs in (1) the composing room, (2) the pressroom, and (3) the bindery.

### **JOBS IN THE COMPOSING ROOM**

Workers in the composing room set type and make duplicate castings. These skilled workmen perform these operations in various ways. They set type by hand or by machine. They make castings of type either by pouring melted metal into impression molds made by type or by an electroplating process.

**Hand compositor (4-44).** The hand compositor sets type by hand and needs a good knowledge of English, spelling, and grammar. From a case in front of him, he picks the type and places it in a "stick," or type holder, in his left hand. As the stick is filled, he transfers the lines of type to a large metal frame called a "galley." When the galley is filled, he inks the type and prints a sample sheet called a "galley proof" which he sends to a proofreader to check for errors.

**Proofreader (1-10).** The proofreader, a clerical worker, indicates in pencil on the proof sheet any er-



COURTESY U. S. GOVERNMENT PRINTING OFFICE

**Proofreaders (1-10) and copy holders (1-04)** work in pairs. One reads aloud to the other as they check printed proof sheets for errors. Corrections are made in pencil, so that the compositor can make the necessary changes in the type in the galley before going to press.

rors or corrections to be made. He is usually assisted by a *copy holder* (1-04), who reads aloud from the original manuscript and otherwise helps in checking the proof sheet.

The compositor, to whom the corrected proof sheet is returned, makes the necessary corrections in the type in the galley and then divides the galley into page-size units. Each page of type is locked in an iron frame called a "chase." Some compositors do all of the work connected with setting type by hand or by machine. They assemble the type and cuts

(pictures) in the chases and do the related tasks necessary for actual printing operations. The compositor learns his skills through from 3 to 5 years of apprenticeship and is thoroughly trained in type styles and printed page make-up. He needs good eyes, quick hands, and a good knowledge of words and punctuation.

**Linotype operator (4-44).** The linotype operator, or composing-machine operator, sets type by using an automatic machine equipped with a keyboard similar to that of a typewriter.





COURTESY MORGANTHALER LINOTYPE CO.

**A linotype operator (4-44)** works on a large automatic machine called a Linotype machine which is equipped with a keyboard something like that of a typewriter. As he types he sets up a *line* of type molds. Then he pulls a lever and melted type metal pours into the molds to make a solid *line of type*. If he makes an error of one letter, he must cast the whole line over again. Both men and women do this work.

As he presses the keys, the machine selects and assembles a line of letter molds. These letter molds are for casting type. When a line of letter molds is completed, the operator pulls a lever and melted type metal flows into the completed line of molds, forming a solid "line of type," or a "slug." This casting is placed in the galley as a solid line of type. If the operator makes an error of even one letter in the line, he must cast the whole line over again.

The training of a linotype operator is the same as that of the compositor. In addition, he must be able to operate the Linotype machine accurately and rapidly as a tool of the trade. Both men and women learn this work and become familiar with the requirements of type composition.

**Monotype-keyboard operator (4-44).** Monotype composing is somewhat slower than linotype composing because two separate machines and



COURTESY U. S. GOVERNMENT PRINTING OFFICE

A "galley" is a large metal frame full of type. The compositor transfers lines of type from the linotype machine to the galley and locks them in place. After inking the type he prints a sample sheet called a "galley proof" which he sends to a **proofreader (1-10)** to check for errors. After the galley proof has been proofed and returned to the compositor, corrections are made in the type and the compositor makes up pages.

two operators are required. The monotype-keyboard operator is a skilled worker whose qualifications parallel those of the linotype operator. He uses a bank of 200 keys, similar to those on a typewriter, for the purpose of punching holes in a narrow roll of paper ribbon—holes similar to those in a player-piano roll. In this manner he transfers the matter in a manuscript copy to a roll of paper ribbon by means of these perforations. When his job is com-

pleted, he tears the ribbon loose from the supply roll and forwards it to the caster, together with type-casting instructions.

**Monotype caster (6-49).** The monotype caster receives the reel of perforated paper mentioned above. His work resembles the duties of a machinist more than printer's work, and he learns his semiskilled trade in a factory that builds Monotype machines. He threads the reel of paper into his machine and admits com-





COURTESY THE EVENING STAR, WASHINGTON, D. C.

**A stereotyper (4-45)** examines a matrix which he has just made. The stereotyper places a whole newspaper page of composed type and engravings of illustrations on his machine and lays a moist wood-fiber mat over this. When he starts the machine, a hot roller presses the type into the mat. This makes a mold similar to cardboard when dry. This mold is called a "matrix." He will fit the mold into a curved casting box and pour in melted metal. The result can be seen in the picture on page 493 of the web-press man locking the curved printing plate on the cylinder of the press.



COURTESY THE EVENING STAR, WASHINGTON, D. C.

A photoengraver (4-47) prepares copper and zinc plates to be used in printing. Here he has just photographed a comic strip and is examining the negative that is to be used for etching the copper or zinc plates.

pressed air. Each hole in the ribbon releases a jet of air, and the machine automatically selects and casts a single letter of type at the rate of 150 per minute. Letters (not lines) are cast singly—one by one; hence the name "Monotype," meaning a single type. Each letter is cast and put in place automatically in the same order that the keyboard operator struck the keys. Lines of movable type are thus formed for locking in the galleys, and a single letter can be changed in the galley without trou-

ble. The Monotype, thus, has certain advantages over the Linotype for easy correction, for statistical tabulation, and for accuracy in spacing—particularly in high-grade book work.

**Make-up man (4-44).** Arranging the corrected set-ups of type, cuts, and headings in position as they are to appear on the printed page is the job of the make-up man. He locks the type in the chases ready for direct printing or ready for the making of plates for the printing press.



**Stereotyper (4-45).** Stereotyping is a quick process, widely used in newspaper work. The stereotyper, a skilled worker, makes an impression, or mold, of a whole newspaper page of composed type and cuts. To form the mold, he uses a wood-fiber mat, called a "matrix." Under heavy rollers he presses the type into the soft mat to make the mold. When this matrix is dry and hard, he fits it into a curved casting box and pours in melted metal. He then removes the curved cylinder of solid metal, which exactly fits the rolls of the printing press. The outside surface carries an exact reproduction of the type. He uses the matrix again and again for duplicate castings if more than one press is used.

**Electrotyper (4-45).** To duplicate a whole flat page of composed type in a galley, the electrotyper, a skilled worker, uses electroplating methods. A number of workers handle the several processes necessary in electrotyping. The *wax runner* (4-45) makes a wax impression of the type. This wax mold is covered with graphite and goes to the *batteryman* (4-45), who operates an electrochemical plating bath. While in the bath, particles of metal deposit themselves on the surface of the wax and coat the mold form with a thin metal sheet—a duplicate of the page of type. A *stripper* (4-45) removes the thin metal shell, and a *caster* (4-45) pours on a backing of lead. This strengthens the metal shell so that it can be used on a printing press.

**Photoengraver (4-47).** Cuts for illustrations, such as photographs and drawings, are prepared by the photoengraver. Several processes are involved, but the journeyman must be able to do all of them or any one of them, according to the size of the service shop.

A halftone cut is a mass of very fine dots when printed, as may be seen in a newspaper photograph. In the shop a *photographer* uses a photoengraving camera to make a negative. The lens, with fine cross lines, shows tiny squares on the negative. The *stripper* coats the negative with solutions and soaks off the thin film. A *printer* transfers the image to a specially coated metal (copper or zinc) plate. The *etcher* uses acid to eat away unwanted parts, leaving other parts raised for printing. The *finisher*, with hand tools, corrects and takes out any imperfections. The *proofer* makes a test print. The *router* cuts away excess metal. The *blocker* nails the metal plate to a wooden block that is type-high, and the block is ready for the press.

In recent years the photoengraver's work has increased in volume because of the numbers of picture magazines being published. Most of the work is regular, with certain rush seasons at holiday time. Most tasks are of the indoor bench-work type. Women are seldom employed as photoengravers.

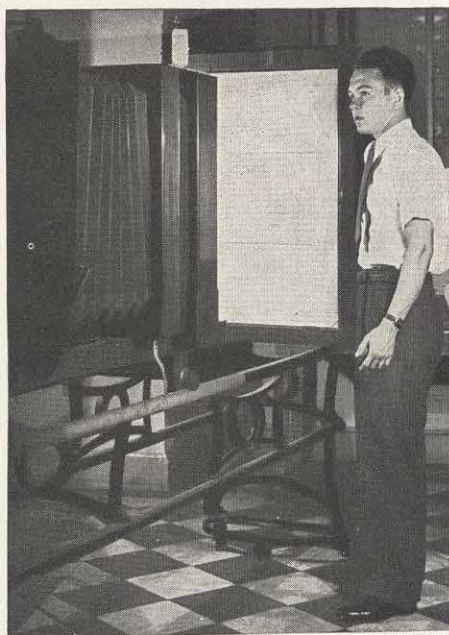
Photoengravers need excellent eyesight, good manual dexterity, and ability to concentrate and give great

attention to minute detail. Pay is excellent, more than half of the workers receiving more than \$2 an hour. The work is highly unionized, and most of these workers are in the International Photo-Engravers' Union of North America (AFL). Wages and hours are controlled, and the number of apprentices is limited.

Training opportunities are not easy to find. No general education requirements need be met, and some workers have no more than grade school education. However, competition for apprenticeships is keen, as there are only 28,000 photoengravers at work in the country. The number of places permitted by the Union is determined by the total number of journeymen in a shop. Boys from 16 to 24 years of age may take the training if places can be found. A beginner works 5 years as a regular apprentice under supervision and another year as an advanced apprentice, making 6 years in all.

### **JOBS IN THE PRESSROOM**

Type and plates prepared in the composing room are sent to the pressroom for printing on the printing presses. Here pressmen place the type in one of several kinds of presses. The type is inked automatically and pressed against yards of clean white paper to make books, newspapers, and other printed matter. Pressmen, who are skilled workers, are known by the kind of printing presses they operate.



COURTESY U. S. CIVIL SERVICE COMMISSION

**A multilith operator (1-25)** photographs maps, illustrations, printed pages, and typewriting for multilith duplicating—a process less expensive than printing. He will develop the picture of the map on a thin metal sheet ready for the press. Ink on the smooth flat surface will wet **ONLY** the lines and letters developed. A soft roller moving over the plate will pick up the ink and transfer it to sheets of paper.

**Platen-press man (4-48).** The simplest form of printing press is the platen press, used particularly for job printing or small work done on letterheads and handbills. The platen-press man adjusts the press and type, and supervises the feeding of paper into the press. The *platen-press feeder* (6-49), a semiskilled operator, assists in feeding the paper stock into the press to be printed.



**Cylinder-press man (4-48).** The cylinder press is used for high-grade printing—books and magazines—where yards of paper on a cylinder are printed by rolling the paper over the inked type. The cylinder-press man tends and supervises the operation of this press.

**Job-press man (4-48).** Either a cylinder press or a platen press is used for printing small quantities of printed sheets that require frequent set-ups of the press. The job-press man operates these presses.

**Web-press man (4-48).** The automatic web-type printing press uses one or more continuous rolls of paper, called "webs." The web-press man attends to the operation of this large press, which prints quantities of newspapers, books, and magazines. In the printing of a newspaper on a web press, for instance, the web-press man receives the curved half-cylinders on which the stereotyper has molded a whole page of newspaper type. After locking these half-cylinders in the complicated web press, he starts the continuous rolls of paper, or webs, through the press. As the newspapers are printed, they come out cut, folded, and counted ready for delivery.

**Offset-press man (4-48).** Offset printing is a lithographic process accomplished by the use of a smooth-surfaced plate without any raised letters. Parts of the plate to be printed are coated with grease, and parts not to be printed are kept wet with water. When an inked roller passes

over the smooth plate, only the greasy areas take the ink. A sheet of paper pressed against the inked flat surface receives only the inked image. A number of lithographic workers—*photographers*, *artists*, and *plate makers*—get the plates ready for printing. The offset-press man operates the press. No more than 4000 offset-press men are employed, but there are many possibilities for more workers in small plants.

### JOBS IN THE BINDERY

The bindery division of a printing plant binds books and magazines. This division receives the large printed sheets from the pressroom before they are cut into pages. Bindery workers fold these big sheets, assemble and fasten the folds, trim the edges, and finish the publication by adding hard or soft covers. Most women and girls in the printing industry are employed in the binderies.

Bindery jobs are for the most part learned in a comparatively short time because little skill is required. Pay for men workers is somewhat higher than for women because of the heavier and more difficult tasks expected of them. The work is not seasonal, but advancement is slow.

*A folder (8-49)* is a laborer, usually a woman, who folds the large printed sheets by hand to form sections of books or pamphlets.

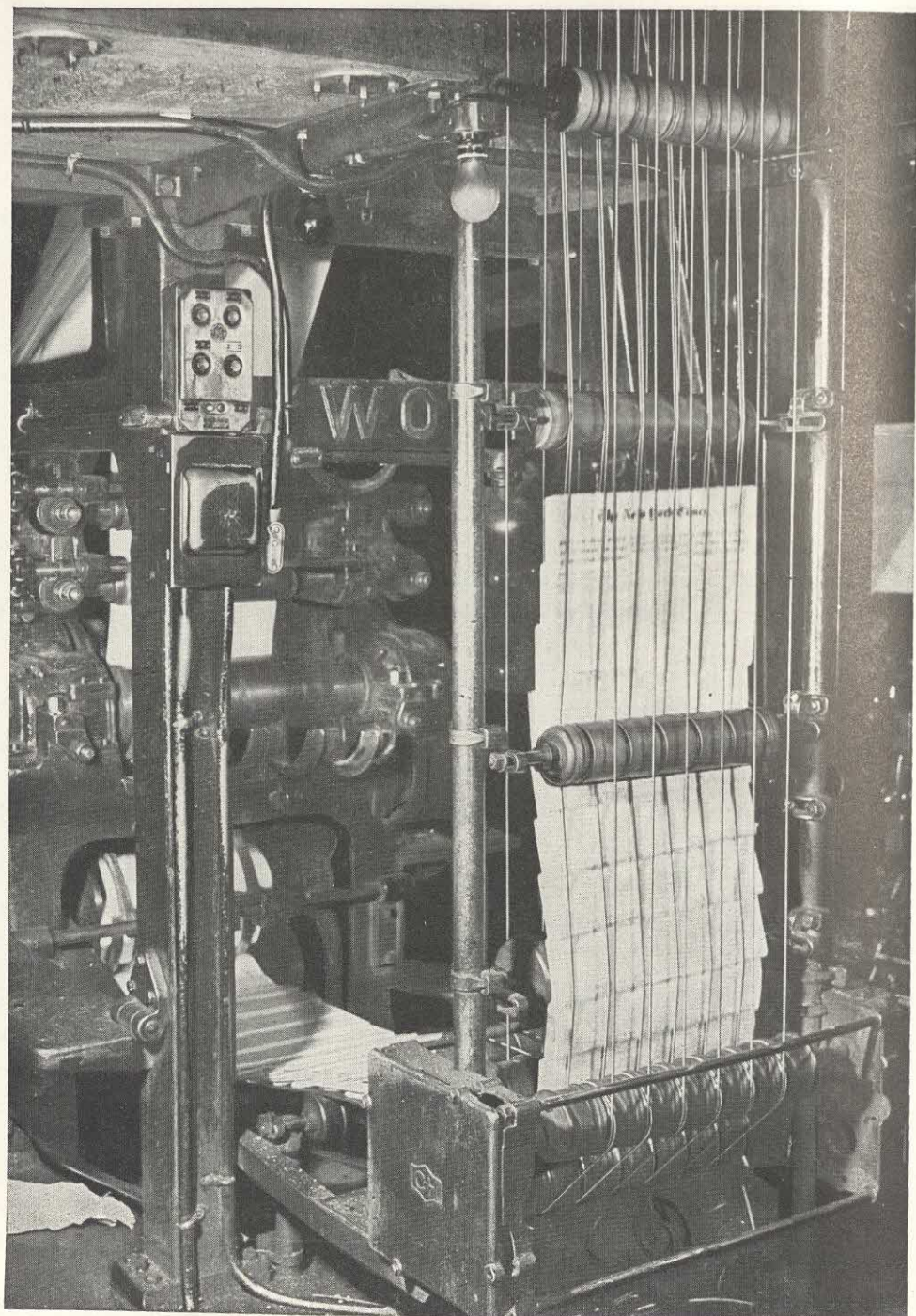
*A folding-machine operator (6-49),* a semiskilled worker, does



COURTESY THE EVENING STAR, WASHINGTON, D. C.

**Web-press man (4-48).** Modern high-speed presses can turn out a 32-page newspaper at the rate of 50,000 copies an hour. Here the web-press man is locking a curved printing plate in position on printing cylinders while the press is stopped. He installs "make-over" (new) plates in the press to change from one edition to another. Note the continuous sheet of newspaper pages.





COURTESY THE NEW YORK TIMES

The continuous sheets of newspaper pages are fed into a machine in which they are cut, folded, and carried up to a room to be stacked, ready for delivery.

similar work on an automatic machine. The folded sheets are then stacked in sequence in separate piles around a table.

A *gatherer* (8-49), usually a woman laborer, selects, or "gathers," one fold from each pile around the table to make a complete book.

A *gathering-machine operator* (6-49), a semiskilled worker, does similar work by operating a special machine.

A *forwarder* (6-49) performs any of the intermediate duties between the folding of the printed sheets and fixing covers to producing finished books. He (or she) "forwards" the process by sewing the pages together by machine, flattening the pages under pressure to make them compact, rounding the backs of the books, applying glue, and finally putting on the covers. The covering process is called "casing-in."

### For Discussion

1. In the printing industry, what is meant by "movable type"?
2. Tell briefly the history of printing.
3. In general, how does a person prepare for employment in the printing industry?
4. What kind of work is done in the composing room?
5. What does the compositor do?
6. Describe the linotype operator's job.
7. Ask the local newspaper for a matrix and explain how the stereotyper makes the impression of a newspaper page.
8. Examine a newspaper photograph and describe the photoengraver's work.
9. What kind of work is done in the pressroom?
10. Compare work done on a letterpress with that done on an offset press.
11. Describe two jobs in the bindery.

### What to Read

*Composing-room Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948, 25 p.

*Electrotyping and Stereotyping Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 21 p.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the printing industry.

SUBJECT AREA	OCCUPATIONAL UNITS
ART:	From a newspaper office or printing office obtain an original sketch or cartoon that has been published and compare it in size and clearness with the published reproduction.
BUSINESS:	Visit a printing office and observe how bookkeeping forms are ruled on a printing press.
ENGLISH:	Study proofreaders' marks concerning punctuation, capitalization, etc., in any good dictionary to learn how manuscripts are marked for the printer.
HEALTH:	What hazards are workers in a printing plant most likely to meet?
HOME ECONOMICS:	Consider what a home economist might need to know about printing and proofreading if she were employed as a writer on a newspaper or magazine.
LANGUAGES:	Obtain a book printed in another country and compare the type, quality of paper, and kinds of illustration with those in American books.
MATHEMATICS:	Borrow a printer's "line gage," (a measuring rule with 72 points to the inch) and learn how to measure type sizes in books.
MUSIC:	Display prints of illuminated musical script of the Middle Ages. Find out how sheet music is printed today.
OCCUPATIONS:	What local apprenticeship opportunities are open in printing?
SCIENCE:	Demonstrate or explain the use of the hectograph for duplicating letters, or explain the scientific principle involved in offset printing.
SHOPWORK:	Why should future printers in your school begin training in the vocational school print shop?
SOCIAL STUDIES:	Discuss one of the following topics: The Effect of the Invention of Movable Type; The Invention of Lithography by Senefelder in 1796.

*Employment Outlook in Printing Occupations.* Bureau of Labor Statistics Bulletin 902. U.S. Government Printing Office, Washington 25, D.C., 1947. 36 p. (20 cents)

*Facts About the Printing Industry.* American Type Founders, Department of Education, Elizabeth, N.J., 1946. 28 p. (Free)

*If You Are Considering Publishing and Printing,* Byron C. G. Culber. Rochester Institute of Technology, Rochester, N.Y., 1946. 19 p.

*Is There a Job for Me in Lithography?* The Joint Lithographic Advisory Council, 70 Pine St., New York 5, 1945. 31 p. (Free)

*Lithographic Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 23 p.

*Occupational Outlook Handbook.* Bureau of Labor Statistics Bulletin 998. U.S. Government Printing Office, Washington 25, D.C., 1951. 574 p. (\$3.00) (See pages 299-300, "Printing Occupations.")

*Photoengraving Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 24 p.

*Pressroom Occupations.* Michigan Unemployment Compensation Commission, Detroit, 1948. 24 p.



## CHAPTER 31 THE MINING INDUSTRY

We all know in a general way what mining is, but the general public is less familiar with the occupations in mining than with most occupations in other industries, because the majority of persons have never visited a mine. Visitors are seldom welcome underground because too many hazards exist for those not accustomed to mines and dark passages. Therefore, most people learn about mines through pictures and stories about miners. The term "miner" is generally applied to any man who works underground in a mine. However, mining is not all carried on underground.

**Mining methods.** In underground mining, shafts are sunk below the surface into the depths of the earth where certain minerals lie. These shafts are equipped with elevators to bring out the minerals. Miners also take the elevators to reach a labyrinth of tunnels and passages which are dug to get at the minerals. Oil from deep wells is pumped from the ground. Sulfur and salt are obtained by pumping hot water down into the deposit beds and bringing up the liquid to be crystallized. This method reclaims the sulfur or salt. Mining

also goes on by the open-pit method in places where ores lie near the surface and can be scooped up by huge steam shovels. Quarries that provide stone, marble, and slate are surface mines where men saw out the blocks of stone.

Probably 1 out of 10 mine workers is a professional employee, college-trained in scientific procedures. These men help to locate mines, survey sites, manage operations, and analyze products. Professional workers study mineral technology in college. This helps a boy to learn theoretical knowledge more quickly than he could gain it through experience and also gives him a better choice of work and surer employment. Among these workers are geologists, mining engineers, and metallurgists.

The men who locate mineral deposits and determine whether or not they are worth exploiting are the *geologists* (0-35). Geology is a basic science for mineral industries, especially economic geology which deals particularly with ore deposits. On field expeditions, the geologist collects samples of rock and soil, and he observes the earth's surface in making maps and recordings.



COURTESY BITUMINOUS COAL INSTITUTE

**A machine driller (7-75)** in a coal mine uses a compressed-air drilling machine to drill holes into the working face of the coal. The holes will be filled with explosive and the mass broken up by blasting.

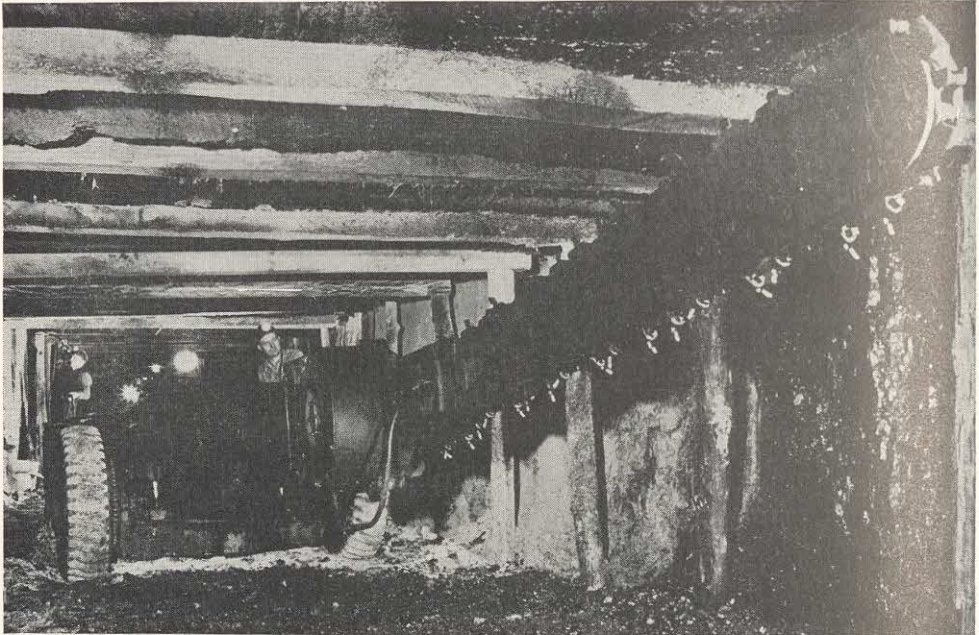
The men who determine the location and extent of mineral lands, make tests, and start operations are the *mining engineers* (0-20). They are usually graduates of a school of mines, with a background of geology, mineralogy, chemistry, and engineering. A mining engineer may start doing mine surveying, or even shoveling, drilling, and timbering, to obtain experience, and he may become a *superintendent* or *manager*.

Then there are those who analyze ores and properties of metals in the laboratory—the *metallurgists* (0-14).

The separation of metal from an ore is a very difficult operation, often done in smelters which may be located miles away from the mine. For example, some of the ore containing tin from the mines of Peru is shipped to smelters in England. The extraction and refining of the metal becomes a series of problems for the chemist or metallurgist who has specialized in the behavior of metals and their alloys.

**The miners.** In many different mines, certain workers do similar work in extracting minerals from the





COURTESY BITUMINOUS COAL INSTITUTE

**A machine man (5-21),** or modern coal miner, uses a tonnage tool—a giant movable knife that can slice a working face up and down, back and forth, at any height. Note the endless chain with its cutting bits.

ground. In general, miners must know state and local mine laws and safety regulations. They all need physical strength, eye-hand coordination, dexterity of hands and arms, emotional stability, and willingness to work under hazardous conditions. Among the 900,000 workers in mining are the following skilled, semi-skilled, and unskilled employees:

*Machine drillers (5-75)* operate drilling machines powered by compressed air, electricity, gasoline, or steam. They drill holes for explosives in the working face of rock, ore, or coal and change and sharpen their drilling tools.

*Hand drillers (7-75)* use percus-

sion-type hand drills for the same purposes.

*Blasters (5-74)* test the air for the presence of gas before firing a charge, then charge and set off explosives to expose the minerals in the ground.

*Timbermen (5-22)* use carpenters' tools to install heavy timbers for supporting the roof and walls of underground openings to prevent cave-ins.

*Machine men (5-21)* operate cutting machines, powered by electricity or compressed air, to cut out a channel along the bottom, sides, or top of the working face of coal, thus forming a cube which can be caved down by the use of explosives. Cut-

ting is done with several types of machines—endless-chain type, saw type, pick-hammer type, or shearing type.

*Machine loaders* (7-21) and hoistmen operate electric and power-driven shovel equipment to excavate, scoop, or load coal, rock, or ore into cars or onto a conveyor at an underground or surface working place.

*Trackmen* (9-32) lay and repair track by hand or by use of a machine that moves and lays the track mechanically for standard and narrow-gauge railroad equipment used in quarries or mines.

*Ditch diggers* (9-22) shovel coal, rock, or ore into mine cars or onto a conveyor from which the mine cars are loaded at some point removed from the working place. They work either in small mines with no mechanical loading equipment or in a working place where it is not profitable to bring up the loading machines.

*Pushers* (9-22) push mine cars on tracks from underground working places to haulage roads, where they are picked up by a locomotive and hauled to the surface onto the shaft bottom for hoisting. The job is unskilled and may be performed by any one of the other workers in the mine.

**Opportunities.** Miners in general need enough education to understand the instructions of the mine foreman and to observe safety rules and regulations. Opportunities are constantly open for trained men to

find new methods in extracting minerals from the ground, but the work is hazardous. Miners must be satisfied to live where the mines are located, often in isolated places. This may mean a lack of educational and cultural opportunities for themselves and their families. The miners' unions are strong, however, and tend to improve working and living conditions and wages.

Young people under 16 years of age are prohibited from this work by the child labor regulations, under the Fair Labor Standards Act effective January 25, 1950. This act prohibits them from work in "manufacturing, mining, or processing occupations, including occupations requiring the performance of any duties in work rooms or work places where goods are manufactured, mined, or otherwise processed."

In order to give a clearer picture of the work of miners, the remainder of this chapter is devoted to occupations and processes in (1) coal mining; (2) metal mining—aluminum, copper, and gold; and (3) quarrying and nonmetallic mining—stone, limestone, and salt.

### BITUMINOUS COAL MINING

Bituminous coal mining is by far the largest branch of the mining industries in the United States. Bituminous coal is the soft coal that burns freely with considerable smoke. Anthracite, the hard coal obtained from the rich mines located in the Appa-



lachian Mountains of Pennsylvania, is nearly pure carbon and burns with little flame or smoke.

Coal mining in the United States consists of nearly 90 percent bituminous mining and 10 percent anthracite mining. Millions of persons are employed in the work of supplying coal and its byproducts to industries and other consumers. The bituminous mines, although operated in many states, are located chiefly east of the Mississippi River in West Virginia, Pennsylvania, Kentucky, Illinois, and Ohio.

**Principal operations.** The principal operations in the mining of coal include (1) prospecting or searching for coal deposits; (2) exploration and development work preparatory to active mine operations; (3) the working of the mine itself, including excavation, hauling, hoisting, ventilation, and drainage; and (4) the preparing of coal for consumption—cleaning, screening, and washing.

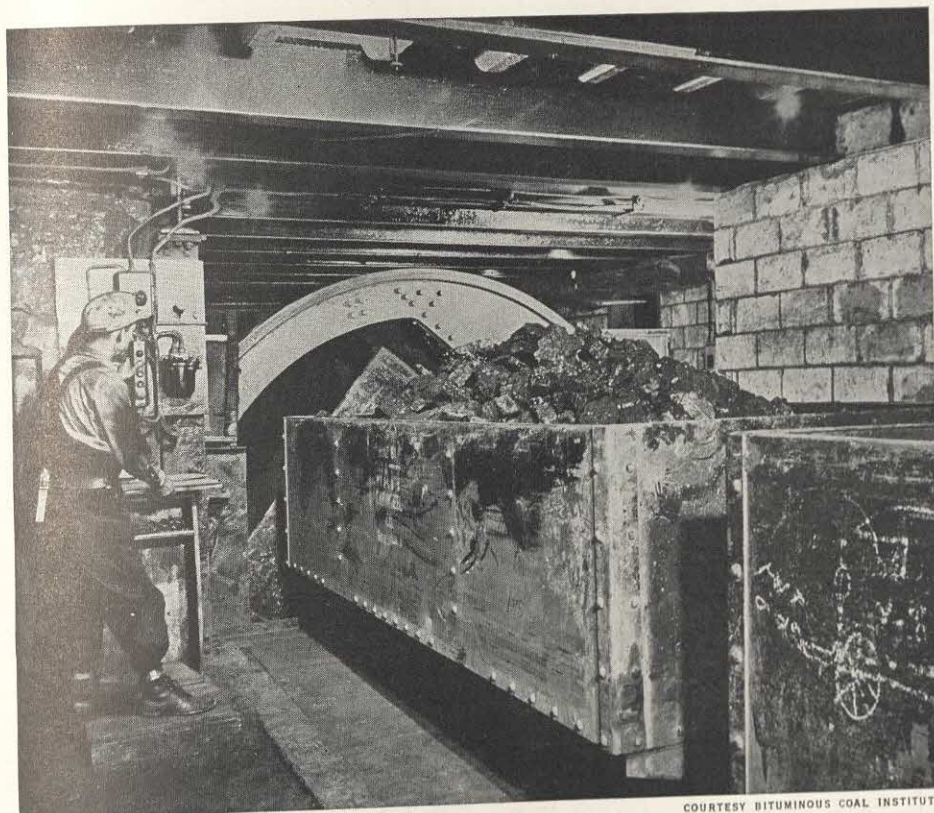
There are two principal methods of mining: strip mining and underground mining. Strip mining is carried on in open pits rather than underground and is the method used in about 10 percent of all production. A trained operator uses a huge power shovel to strip the layers of earth away from the coal near the surface of the ground. The coal is loosened by blasting and loaded on cars for cleaning operations.

Underground mining is more important than strip mining, since 90 percent of the coal mined is ob-

tained by this method. Miners go down a shaft, sunk into the coal seam hundreds of feet below the surface, dig the coal, usually by mechanical means, load it into cars, and transport it to the mouth of the mine where it is screened and loaded into railroad cars. Underground miners are divided into two groups: tonnage men and day men.

*Tonnage men* (5-21) dig the coal at the working face and are paid at a certain rate per ton of coal mined. The old-fashioned *pick miner* in the bituminous coal fields generally dug the coal by "undercutting the seam"—that is, making horizontal and vertical cuts anywhere in the coal face; boring shot holes for blasting out the coal; preparing the powder charge; and shoveling the coal, when broken down, into the mine car. Today, in large mines, machines do much of this work. Underground miners are usually assigned in pairs to "rooms" (caves) for digging and loading the coal. Each may operate a cutting or loading machine. One of the miner's big jobs is undercutting the seam with a special machine. When he finishes the undercut, he drills into the coal with a hand or a machine drill. The *blaster* (5-74) fills the explosives and sets off the charge to break up the mass of coal. Then the shoveling begins. Mechanical scrapers and loaders load the coal into the mine cars without the need for hand labor.

*Day men* include workers whose tasks are hauling, ventilating, pump-



COURTESY BITUMINOUS COAL INSTITUTE

In mechanized mines machines do the work. Loaded cars move into this continuous-cycle rotary dump. When the operator presses a button the car is automatically tipped upside down, and its load slides through a shoot and is moved to the surface. In this mine steel beams support reinforced-concrete ceiling slabs and block walls.

ing, supplying power, timbering, and maintenance. They use machines for hauling and also belts and trough-conveyors for transporting coal from the face to central loading points or even to the surface. The *timbermen* (5-93) help prevent the roof from collapsing by "timbering up," or setting up supporting pillars where needed. The *driver* (5-93), a foreman, supervises the transportation men, routes the coal to the shaft

or slope, and hoists it to the surface to load freight cars for shipment. Many skilled workers—*electricians*, *welders*, *machinists*, *carpenters*, and *Diesel* and *auto mechanics*—perform tasks in the mechanical departments under the supervision of the mechanical engineer.

**Conditions of work.** For employment in the coal-mining industry, one must go where the coal deposits exist. Miners must live in the small,



isolated mining towns and often in company-owned houses. Strong unions have helped to improve their living conditions and wages, and most miners are members of the United Mine Workers. The miners' day is regulated by contract, including "portal to portal" travel time, or the time it takes to travel from the mine entrance to workroom and back again.

Coal mining has been largely mechanized and strictly regulated for safety. However, it is still a hazardous industry. Some miners must work in a stooped position, and most must exert considerable muscular energy. In underground mines, workers are exposed to danger from explosions, falling rock, and slate. Federal and state officials and company *safety engineers* make regular inspections of mines in an effort to reduce hazards and improve working conditions. Miners may become *foremen* or *mine bosses*, but they seldom advance to executive positions.

**Preparation.** There are no particular educational requirements for miners. Some companies provide training schools, and some public vocational schools near mining communities offer courses that train for certain aspects of mining. Miners generally learn their work as boys on the job, receiving instruction from experienced miners for a period of two years. Frequently, the boys are miners' sons. A "practical miner's certificate" is required in some states

by passing an examination given by the State Board of Examiners.

### METAL MINING

Among the metals widely used and mined are iron, lead, zinc, aluminum, copper, and gold. Rock that has metal in it is known as "ore." An ore field is known as a "lode." Sometimes metal ore is found close to the surface of the earth so that it may be scooped up in shovels. Sometimes it lies deep in the earth and must be mined underground. Iron-ore deposits are found chiefly in Minnesota; lead, in Missouri, Idaho, and Utah; zinc, in New Jersey, Arizona, and Oklahoma; and gold, in Alaska, California, South Dakota, and Utah. Examples of three kinds of metal mining—aluminum, copper, and gold—are discussed below.

**Aluminum mining.** Aluminum, the earth's most abundant metal, is never found in its pure state as a metal but is stored in an ore called "bauxite," because this ore was first discovered in Baux, France. Bauxite looks like ordinary clay, and for years scientists tried unsuccessfully to extract aluminum from the ore. It was not until 1863, when Charles Hall discovered a method of extraction by using electricity, that aluminum could be separated cheaply for industrial use. In 1947 nearly 2 billion pounds of aluminum were produced in this country to be used for such purposes as kitchen utensils,



COURTESY BUREAU OF MINES

**Copper miners (5–21)** often work above ground. Surface mining of copper is safer, cheaper, and more spectacular than underground mining. The open-pit mine consists of a series of giant steps called “benches.” These benches are at least 30 feet high and wide enough for railroad tracks and road machines. Operators use power shovels to load the ore into cars.

foil, airplane coverings, and parts of machines.

Bauxite is found chiefly in Arkansas, Alabama, Georgia, and Virginia. When it lies close to the earth’s surface, workers in open-pit mines scoop it up with power shovels and load it onto freight cars for refining. Miners also dig it out like coal when it lies deeper in the earth. The workers loosen the ore by dynamiting, in order to handle it, and haul it to nearby mills for processing.

Unskilled and semiskilled workers, directed by *foremen* (5–93), do most of the work of refining the ore. Organized crews tend machines which crush the ore, wash it, dry it in ovens, grind it to a fine powder,

and refine it by electric current. *Pot-room foremen* (5–92) direct the *pot-men* (6–92), who finally pour the aluminum in its liquid state into molds to make ingots. Most of the aluminum mining in the United States is done by the Aluminum Company of America.

**Copper mining.** Copper is found chiefly in Arizona, Utah, New Mexico, Montana, and Nevada. In 1951 the United States produced 929,000 tons of copper. Copper miners work in surface mines or in underground mines.

Surface mining of copper is safer, cheaper, and more spectacular than underground mining because one can observe operations. The open-



pit mine consists of a series of giant terraces, called benches. These steps are at least 30 feet high, and wide enough for railroad tracks and road machines. Miners make holes in the side walls, fill them with dynamite, and expose the ore by exploding the charge. Operators then bring up huge power shovels and load the ore into cars to be taken to the copper mills for refining. The largest open-cut copper mine in the United States is in Bingham Canyon, Utah, where operators of electric shovels continue to eat away a whole mountain that is half a mile high.

In underground mining of copper, a shaft sometimes a mile deep is sunk into the earth as in coal mining. At intervals on the shaft, miners cut stations, or landing places. From these stations they dig tunnels to the ore and install railroad tracks and electric lights. *Miners* (5-21) in these tunnels use not only pick and shovel but pneumatic drills and dynamite, as well, in order to take out the ore. *Machine loaders* (7-21) load the ore into small cars, take it to the shaft, and put it on swift skips (elevators) that carry it to the surface with great speed. Unlike coal miners, copper miners have no need to fear poisonous gases.

Smelting of the ore may take place near the mine. Bits of rock and dirt are first removed with water and oil. *Smeltermen* then process the ore by smelting (melting) it to remove other impurities. The ore is smelted twice. Smeltermen operate a special

furnace where great heat is applied to the ore. *Metal pourers* pour the liquid copper into molds to form pigs, which are used for many products, one of the most important of which is copper electric wire. Purer copper, called electrolytic copper, is made by an electrical process.

**Gold mining.** From antiquity, gold has been considered a precious metal. It does not tarnish or corrode and is heavier than all other metals except platinum. A cube of gold measuring 14.1 inches on each edge weighs 1 ton (2000 pounds). Gold can be beaten into gold leaf thinner than tissue paper. This work is done by men called *goldbeaters* (4-94).

Gold can be alloyed with other metals to change its color and hardness. Pure gold is 24 k. (24 carats) and is too soft to be serviceable. Therefore, most "solid gold" objects are only part gold. For example, a mark of 14 k. on the inside of a gold ring means fourteen twenty-fourths are pure gold and ten twenty-fourths are copper or some other metal. The unit in weighing fine (pure) gold is the troy ounce. In 1947 world production of gold was 29 million troy ounces, of which the United States produced 8 percent. The United States Government no longer coins gold money but holds its gold assets in the mints and in the Gold Bullion Depository at Fort Knox, Kentucky.

Gold in the United States is found chiefly in California, Colorado, Nevada, South Dakota, Utah, and Alaska. The number of gold miners

has been declining in the last several years. In 1947 there were only 8200 gold miners, compared with 27,500 in 1941. Gold miners work in two types of gold mines: (1) lode mines and (2) placer mines.

In lode mines gold occurs often in veins of quartz in rich streaks or pockets, along with other minerals. *Gold miners* (5-21) dig out the ore after which it must be processed to obtain the gold.

In placer mines, gold occurs in sand and gravel and must be separated out. The old prospectors used to "pan" gold, using a shallow pan with a curved bottom and washing the gravel in a stream of water. The heavy gold particles sank to the bottom of the pan while the light sand flowed off with the water. In the same manner, the *placer miner* (7-21) recovers free gold from gold-bearing sands by shoveling the gravel into a stream of water which runs through sluice boxes (flumes) with riffles (cleats) along the bottom. The riffles catch the heavier gold particles. The *hydraulic miner* (7-21) directs a stream of water under pressure against a bank of gold-bearing gravel and into sluice boxes where the gold particles sink and are caught in the riffles.

### QUARRYING AND NON-METALLIC MINING

**Quarrying stone.** The ancient Greeks used pure white "Parian" marble for their statues and buildings. The

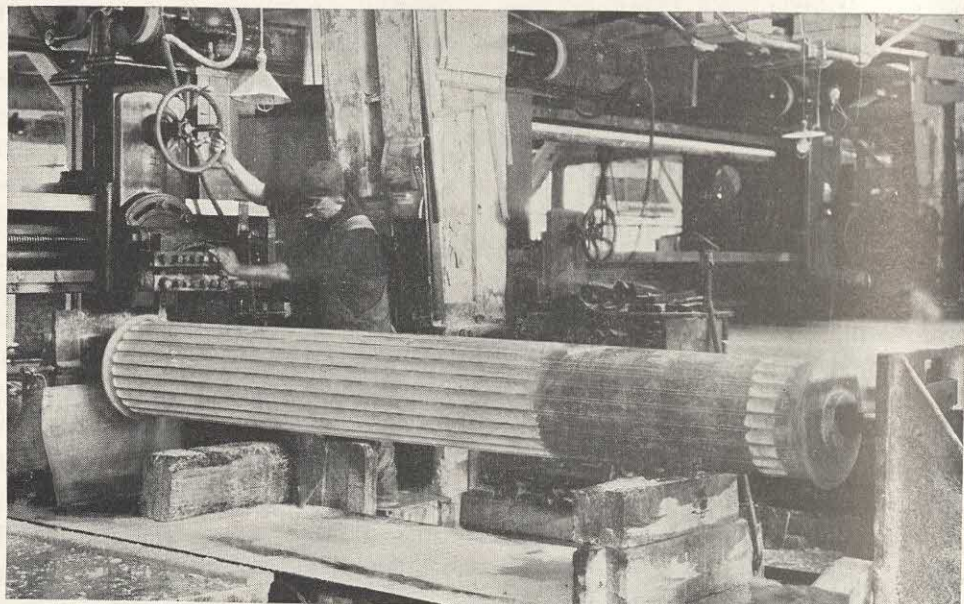
marble came from the quarries on the Island of Paros, and these quarries are still being worked. In the United States quarry industries are usually small, with fewer than 20 workers each. Various kinds of stone—marble, slate, granite, sandstone, limestone—are extracted from the surface of the earth primarily for building and construction purposes. The quarries are often located near cities where workers can live conveniently.

Two types of workers are employed in quarries: (1) production workers who extract the stone and (2) transportation workers who hoist the stone by derrick and load it on freight cars.

The production workers work in open pits where *drillers* (5-75) undercut the rock wall ready to blast out the rock. *Blasters* (5-74) place explosive, tamp it in tight, and touch off the charge to loosen the rock from the solid mass. To obtain finer layers of granite, a *foreman* (5-93) measures the block desired and *Jack-hammer operators* (7-75) use drilling machines to drill holes in a line. The *breaker* (7-22) places steel wedges in the holes and drives them in with a sledge hammer. The block splits along the line desired. Marble is so soft that a *channeling-machine runner* (5-75) with a machine can cut (drill) it, and a crew of wedgers can pry the blocks apart with crowbars.

Transportation workers take charge when the blocks are ready to





COURTESY BUREAU OF MINES

**The stone planer (4-69)** at a marble quarry uses a machine to cut the grooves in a marble column. He continues planing operations until the block of marble checks with the dimensions given him. Note the uncut section with guide lines at the right of the column.

be moved. *Laborers* (9-22) secure chains and hooks around the block, and all hands balance it out of the pit. The *hoisting engineer* (5-73) and *signal man* (7-32) operate the derrick.

Quarry workers are employed in open pits rather than in mines. They must be strong and used to heavy, outdoor work. Most jobs do not have any special educational requirements, since practical and technical knowledge is gained on the job. The work depends upon construction demands and is therefore seasonal, with slack periods in January, February, and August.

**Quarrying limestone.** Limestone is

widely used in industry as a blast-furnace flux in making steel and glass, in fertilizers, for road materials, and for cement. Quarrymen work in 1200 limestone quarries located in Pennsylvania, California, Michigan, New York, Ohio, Illinois, Texas, and many other states. A limestone quarry is a big circular hole in the earth with cliffs for sides that may extend for several miles. The quarrymen loosen the stone cliffs by blasting with dynamite. *Machine drillers* (7-75) bore holes into the limestone and fill them with tons of dynamite. The resulting blast loosens hundreds of tons of limestone. *Machine loaders* (7-21) with

power shovels scoop up the broken rock and load it on small skip cars, which are pulled out of the quarry and up an incline by cables. Electric locomotives then take the cars to the nearby mill for crushing operations.

**Making cement.** Limestone is one of the chief ingredients of cement, and cement is one of our basic products used for all kinds of structures, highways, and modern construction. Cement mills are located near limestone quarries because the weight of cement prevents dealers from shipping it long distances at a profit. However, it is available everywhere, and the amount of cement used in an area is a measure of the amount of building activity locally.

Joseph Aspdin discovered Portland cement in England in 1824 by burning lime and clay together at a high temperature. He called the resulting powder "Portland cement" because it was the color of the stone quarried in the Isle of Portland. The United States began the production of Portland cement in 1872. Cement hardens when mixed with water. Some cements set in a few minutes. Hydraulic cements harden under water. Chemists at the cement plants continuously work out the proper formulas before the limestone is converted into cement.

Rock from the quarry is taken to the top of the crushing plant and dropped into the mill hopper for grinding. Gravity takes the stone through the crusher. After being pulverized and combined with other

ingredients, it is burned in a large rotary kiln which can deliver 1000 barrels of cement a day. The *burner man* (6-67) operates the kiln. The *miller* (6-67), or *grinder operator*, grinds the clinkers that come out of the kiln to a fine powder which we know as Portland cement.

**Mining salt.** In early history common salt was so important an article for man or beast that whole caravans carried little else but salt. In Rome the street where salt dealers lived was called the "Salarian Way." In the United States more salt is used than any other material in the manufacture of chemicals, and each one of us uses about 6 pounds of salt a year to season food. We obtain salt in 19 states—from the Great Salt Lake, salt marshes, rock salt, salt mines, and salt wells. Michigan ranks first and New York second in salt production. About 1400 workers in 17 plants produce more than 2 million tons of rock salt annually.

Salt workers obtain salt from evaporating sea water, from salt mines, and from salt wells. The work of evaporating sea water by the sun is an old and slow process but still carried on.

Salt mines may be shallow pits, but in most cases they are far below the surface of the earth. In general, salt is mined like coal. Salt miners use compressed air drills, electric crushing machines, and shoveling machines to break loose and load lumps of rock salt. They take the salt to the surface and lift it to the





COURTESY BUREAU OF MINES

**Salt miners (7-21)** dig rock salt, crystallized on the walls of a salt mine, and load it on cars to be taken away for processing. Eight states produce 4 million tons of rock salt annually. Salt is also produced by evaporation of brine from sea water, the Great Salt Lake, and salt wells. Of the 19 states that produce salt commercially, Michigan produces the most and New York ranks second.

top of a mine building, called a "tipple," where it goes through crushers. The *millers* (4-52) tends the continuous operation of grinders in the salt mill in which crude salt is ground, rolled, and screened for size. It is then finally sacked and put on freight cars for delivery.

Salt wells, like oil wells, are drilled down to the rock-salt deposit. Fresh water is pumped down into the salt vein to form a brine. The brine, forced up to the refinery, contains about  $2\frac{2}{3}$  pounds of salt to the

gallon and goes to huge wooden vats holding 125,000 gallons each. *Chemists* (0-07) draw samples to determine the salt content and impurities. The salt brine is then settled, purified, and allowed to crystallize, either by the open-evaporator process or the vacuum-evaporator process. The *pan man* (6-52) controls the evaporation processes to produce crystallized salt. The *salt lifter* (8-52), a laborer, working from a raised platform over the salt tanks, shovels salt which is later dried and packaged.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the mining industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Draw on paper several different methods of cutting facets on a diamond.
<b>BUSINESS:</b>	Discuss the duties of a paymaster in a mining company.
<b>ENGLISH:</b>	Write a story about some common mineral that is used daily.
<b>HEALTH:</b>	What are the health hazards in underground mining? What safeguards have been provided to minimize such hazards?
<b>HOME ECONOMICS:</b>	Compare the advantages or disadvantages of cooking utensils made of copper, aluminum, steel, iron, and tin.
<b>LANGUAGES:</b>	Compare working conditions in foreign mines with conditions in American mines.
<b>MATHEMATICS:</b>	Find out the cost of heating your home last winter, and estimate the cost for the coming winter using current fuel prices.
<b>MUSIC:</b>	What musical instruments depend upon metal dug from the earth for their sound?
<b>OCCUPATIONS:</b>	Have a class representative write to the Bituminous Coal Institute, Washington, D. C., for pictures and descriptions of coal mining. Make a class exhibit of the best pictures.
<b>SCIENCE:</b>	Examine metal ores in the laboratory, and make a list of metals from the heaviest to the lightest.
<b>SHOPWORK:</b>	What kind of shopwork would be most useful to a boy who wished to become a miner?
<b>SOCIAL STUDIES:</b>	Discuss either union activities of miners or standards of living of miners.



**For Discussion**

1. Describe two different methods of mining.
2. Who are the professional mine workers?
3. Discuss the duties of six different mine workers.
4. What is the difference between strip mining and underground mining?
5. Describe briefly the duties of an underground miner.
6. Tell about the conditions of work in a modern coal mine.
7. How is aluminum mined?
8. Describe an open-pit copper mine.
9. What does "14 k." mean when stamped on the inside of a gold finger ring?
10. Describe the jobs of quarry workers.
11. Tell about cement and cement workers.
12. How is salt mined?

**What to Read**

- Careers in the Mineral Industries*, John V. Beall and George P. Lutjen. American Institute of Mining and Metallurgical Engineers, 29 W. 39 St., New York 18, 1953. 30 p.
- Coal Mining (Ask for current descriptive pamphlets for school use.) Bituminous Coal Institute, Southern Building, Washington, D.C.
- The Development of American Industries*, John G. Glover and William B. Cornell. Prentice-Hall, Inc., New York, 1946. 1005 p.
- Living in the Peoples' World*, L. V. Roth, S. M. Hobbs, and W. J. Greenleaf. Laidlaw Brothers, Inc., New York, 1949. 767 p. (See Chapter 8, "Metals and Fuels.")

## CHAPTER 32 THE PETROLEUM INDUSTRY

Petroleum, like coal, has been in the process of making for a million years. Plants and animals have lived and died in the warm seas that once covered much of the earth, and sand and soft mud have buried their remains. The mud and sand gradually turned to rock. As tremendous pressures took place in the earth, the plant and animal remains turned to a greasy liquid, which we are familiar with as "petroleum," meaning "rock oil."

**Natural oil storage.** The supply of rock oil is stored in tight caves below the surface of the earth in porous shales, limestones, and sandstones, usually together with an amount of natural gas, under pressure, and a quantity of salt water. In such caves, arched cap-rock holds the gas from escaping and forms a natural reservoir for the oil. Gas, being the lightest, finds its way to the top of the arch, and the oil floats on top of the salt water. Thus, three levels are held naturally underground—salt water at the bottom, oil on top of the water, and natural gas above the oil—waiting for man to find the supply.

**National importance.** Petroleum supplies two-thirds of the energy requirements of the whole country. One-half of the products of petroleum is used for automobiles, trucks, and aircraft. Two-fifths is used to operate Diesel engines and to heat homes and factories. The remainder is converted into kerosene, asphalt, waxes, naphtha, benzine, jellies, and tars for the chemical industry.

The 445,000 oil wells in the United States alone produce 5 million barrels of oil daily and provide jobs for a million workers in the industry and related fields. Occupational opportunities await an army of workers who are interested in studying oil—its properties, production, refinement, and use. In getting oil from the ground, about 150,000 persons are employed in exploration (5%), drilling (25%), production (60%), and contract service (10%). In 437 refining plants there are about 146,000 employees.

**Locating oil.** The only way to discover the presence of oil and gas is to bore a well. Each year up to 40,000 wells are drilled. Out of every five wells, three produce oil, one

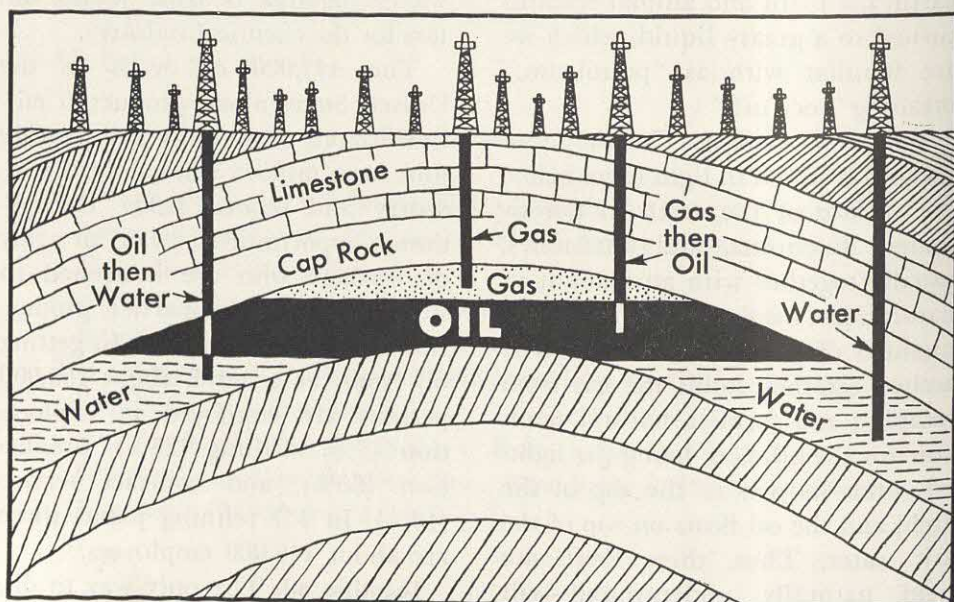


produces gas, and one is a dry hole. *Geologists* (0-35) and *geophysicists* (0-35) predict that sufficient amounts of oil remain below the earth's surface to last us for years to come. They know that certain localities are favorable for the location of new wells. By scientific methods, they aim to take the guesswork out of finding oil. By one such method the geologist uses dynamite to create a miniature earthquake. He then times and measures the earth's shivers with an instrument called a "seismograph." In the laboratory he examines rock specimens and samples of the earth.

Nine-tenths of the oil production in the United States comes from the following six states: Texas (45%), California (20%), Oklahoma (8%), Louisiana (7%), Kansas (6%), and Illinois (4%).

**Opportunities in oil.** Most workers in the oil industry are employed by large companies that carry on all activities in oil, including selling. Such large companies produce 60 percent of the country's crude oil, but other smaller companies also produce crude oil and employ thousands of workers. Some companies engage in all phases of oil production, and

### HOW OIL IS STORED IN THE GROUND



COURTESY AMERICAN PETROLEUM INSTITUTE

Oil is where you find it, and it may be found or missed when drilled for in the same field. Oil is stored underground, usually with an amount of natural gas and a quantity of salt water. Arched cap rock forms a natural reservoir. The cross-section above shows how oil may be near and yet be missed.



COURTESY STANDARD OIL CO. (N. J.)

**A geologist (0-35)** locates oil by scientific methods. He has used dynamite to create a miniature earthquake (*background*), and on the recording truck he watches the "siesmograph" which records the earth's vibrations due to the explosion. By the kind of vibrations recorded, he is able to tell if oil is present.

others specialize in drilling wells or related work. Contractors may specialize in one type of operation—exploration, rig building, drilling, or cementing—especially if equipment is expensive and highly skilled workers are required.

Employment opportunities in the

petroleum industry are located through the employment offices of the oil companies. Such offices are maintained in connection with refineries and district offices. As an example of the nature of opportunities, it has been estimated that for 200,000 men employed in the oil in-



dustry in Texas, distribution of jobs was as follows: in service stations and bulk stations, 28 percent; in allied industries, such as tool companies, 20 percent; on producing wells, 19 percent; in refineries, 12 percent; in offices, 9 percent; in drilling wells, 8 percent; and in work on pipelines, 4 percent.

**Working conditions.** Exploration requires exceptionally vigorous men who work in open country. Drilling operations require men physically fit for heavy outdoor work. Drilling crews must move frequently from one location to another, wherever a well is being drilled. *Derrickmen*, who work 80 feet above ground, must have a good sense of balance and lack of fear. The accident rate among *oil-well drillers* is the highest of those for workers in any industry. Housing conditions are often poor because the work in oil fields is likely to be in some isolated or rural community that lacks many conveniences.

Production workers in charge of maintaining the well and pumping the oil do not move as often as the drillers. Refinery workers in large plants near transportation stay in one location. The increased use of "cracking" and other modern processes has enlarged the importance of spreading refinery plants and the need for highly skilled workers. Accident rates in refineries are low.

Probably one-half of the employees in petroleum refineries and one-

fourth of those in drilling and production are under written union agreements. The largest union is the Oil Workers International Union (CIO).

**Preparation for work.** Young, active, single men are preferred in the oil industry because of the heavy work required and the isolated living conditions. A man usually enters oil-well production as a laborer, roustabout, or mechanic helper to gain experience on the job under direct supervision.

In the refining industry men enter as inexperienced workers in a labor pool doing manual work as directed. After a worker has become a helper, formal training begins. Many employers have established training programs for new workers.

Apprenticeship programs are often available for *pipefitter*, *carpenter*, *welder*, or *electrician*. Educational requirements are not very high, except for professional and clerical workers. However, those with high school or trade school experience have better opportunities to find jobs. Workers who begin as laborers advance very slowly because the industry follows the seniority system of promoting the oldest workers first.

The kinds of work and workers in the oil industry are further described in the following four sections on jobs in (1) drilling wells, (2) production of oil, (3) oil refining, and (4) transportation of oil.





COURTESY STANDARD OIL CO. (N. J.)

Steel oil derricks are erected by **rig builders (5-20)** to support the tools, cable, and machinery for drilling wells. Note the pipe rack in the foreground.



## **JOBS IN DRILLING WELLS**

Drilling is the last step in hunting for oil. Sometimes oil wells extend into the ground for one or two miles. The drilling of an oil well, therefore, requires the supervision of a trained engineer.

**A petroleum engineer (0-20)**, among the newest of the specialized engineers, supervises the drilling of wells, the production of oil or gas, the transporting of natural gas and oil, the refining of crude oil, and the marketing of petroleum products. He must be familiar with many phases of chemical, civil, mechanical, and electrical engineering because his job is to install equipment, survey oil lands, plan roads, and lay pipelines. The recognized engineering schools offer preparation in these fields.

A petroleum engineer may use either of two methods of drilling: (1) the cable method or (2) the rotary method. The cable method, which came first, is still used to some extent for shallow drilling. By this method, heavy tools, suspended from a cable, pound their way down into the ground.

The rotary method is most common for deep drilling and can be likened to the method a carpenter uses when he bores a hole in wood with a brace and bit. More than 90 percent of all oil wells are now rotary drilled. Power from surface equipment is transmitted to the bit. The bit is at the end of a column of

rotating pipe, through which fluid mud is forced down on the inside. The mud, as it comes up on the outside, cools the bit, brings the rock cuttings with it to the surface, and reinforces the walls of the hole until a steel casing is inserted.

Before starting drilling operations, it is necessary to have a derrick—the most obvious sign of activity in an oil field. These four-legged steel or wooden derricks rise 100 to 150 feet in the air and support the tools, cable, and machinery for drilling.

**Skilled rig builders (5-20)**, under the supervision of the *rig-builder foreman* (5-93), erect these derricks.

**The rotary driller (5-75)** bosses the crews, supervises the drilling operations at the well, chooses proper drill bits, operates the controls that regulate the first flow of oil at the well, and is responsible for expensive equipment and for the safety of his crew. His crew consists of four men, as follows:

*The derrickman* (5-20), who works far up in the derrick, assists with raising or lowering the drill pipe and casing and helps to add 30-foot lengths of pipe to the hollow drill stem as the drill goes deeper and deeper into the ground.

*Two rotary-driller helpers* (7-75), or pipe rackers, have charge of the 30-foot lengths of pipe, load them on nearby pipe racks, and help in adding them to the drill stem.

*A rotary fireman* (7-70) fires the boilers to supply steam power for



COURTESY STANDARD OIL CO. (N. J.)

**Rotary drillers (5-75)** and helpers on the night crew at an oil well are pulling the drill pipe from the hole in order to replace the bit. Crews work in three daily shifts of 8 hours each.



operating the rotary drilling rig and may assist in changing drilling bits and running drill pipe and casing into and out of the well.

As the drilling progresses, the driller removes samples of earth from the hole for laboratory analysis. As the oil sands are being reached, he keeps a constant check on the presence of oil by examining the "drilling mud" that comes up. Upon locating the oil-bearing sands, the crew inserts a casing of pipe in the well hole and cements it just above the oil-bearing sands. The crew then caps the well with valves and gages to control the escape of crude oil and natural gas. As soon as the well is producing oil, the work of the drilling crew is over, and the men must move to another location.

### **JOBS IN PRODUCTION OF OIL**

Production workers take over as soon as the drilling of a well is completed. Their job is to lift the oil to the surface.

**Pumpers (7-72)**, semiskilled workers, choose the right size of pipe and use the pressure of the confined gas in the well to help lift the oil. They operate units, powered by steam, gas, gasoline, electricity, or Diesel power, to regulate the flow of oil and store it in field storage tanks. These tanks hold about 2000 barrels of oil.

**Roustabouts (7-20)**, semiskilled workers, do the heavy work. As members of crews, they assist in connecting tanks and flow lines, and

in miscellaneous pipe-fitting work.

**Well pullers (5-20)**, skilled workers, make repairs when the flow of oil is interrupted for any reason. They clean and service the wells, pull out rods and casings for repair, and otherwise correct the difficulties that interfere with oil flow.

**Gagers (6-55)** gage, or measure, the oil flowing into tanks, and follow established production schedules where conservation laws limit the amount of oil that may be taken out of a well daily. They also control the flow of oil to pipelines at the well, in the field, or at the refinery.

### **JOBS IN REFINING OF OIL**

In the refinery, petroleum can be broken down into "lubricating oil," from which we obtain various kinds of light and heavy oils for machines, and "light distillate," which gives us gasoline, kerosene, naphtha, soaps, and varnishes. Other "end products" include plastics, medicinal oil, anesthetics, industrial alcohols, glycerine, insecticides, and antifreeze solutions.

A big refinery looks more like a giant laboratory than a factory. There are few moving machines, and pipes appear everywhere. Some of the tanks that hold crude oil are slender and as tall as a 10-story building. The refinery receives the oil from pipelines, railroad tank cars, ocean tankers, or from storage tanks where *pumpmen* and *helpers* pump the oil.



COURTESY STANDARD OIL CO. IN. P. I.

In a refinery petroleum is broken down into light and heavy lubricating oils for machines and "light distillates" for gasoline, kerosene, soaps, and varnishes. Special forms of tanks are used for the lighter products. These propane spheres are painted with aluminum paint to lessen evaporation.

Crude oil is not a single substance. It is a mixture of different ingredients that boil at different temperatures and can be distilled out. Distillation is a means of separating the original crude oil into its parts. The supervision and direction of the operation of a series of stills and other refining units to separate the crude

oil into gasoline, kerosene, and other products is done by *stillmen* (4-55). Distillation is a fairly simple process of boiling the crude oil at a certain temperature to get a certain product. When it is cooled, the vapor is condensed and forms a liquid—as, for example, gasoline. With more heat, kerosene is taken off, and as the tem-



perature is increased, gas-oil, lubricating oils, fuel oil, and asphalt are produced. Breaking down heavier oil into gasoline and light oils by heat and pressure is known as "cracking."

Temperature, pressure, rate of oil flow, and tank levels are maintained by *control men* (6-55). *Stillmen helpers* (6-55) patrol the plant looking for leaks. *Safety inspectors* (0-79) make tests for gas. *Purification foremen* (5-91) and *purification operators* (4-55) control equipment that separates the vapors. *Absorption operators* (6-52) control the condensation of vapors into liquids. *Treaters* (4-55) remove the impurities. *Still firemen* (6-55) control the operation of burners to maintain required temperatures in furnaces of stills. *Cleaners* (8-55) clean the interiors of stills, oil and acid storage tanks, tank cars, and distillation towers. Various maintenance workers service and repair operating equipment. Professional workers—*petroleum chemists*, *physicists*, *chemical*

*engineers*, and *mechanical engineers*—are employed in relatively large proportion to do highly specialized work. (See Chapter 11 on professions.) In a typical establishment, the distribution of the work force in production compared with that in refining, according to the major occupational groups, is given in the table below.

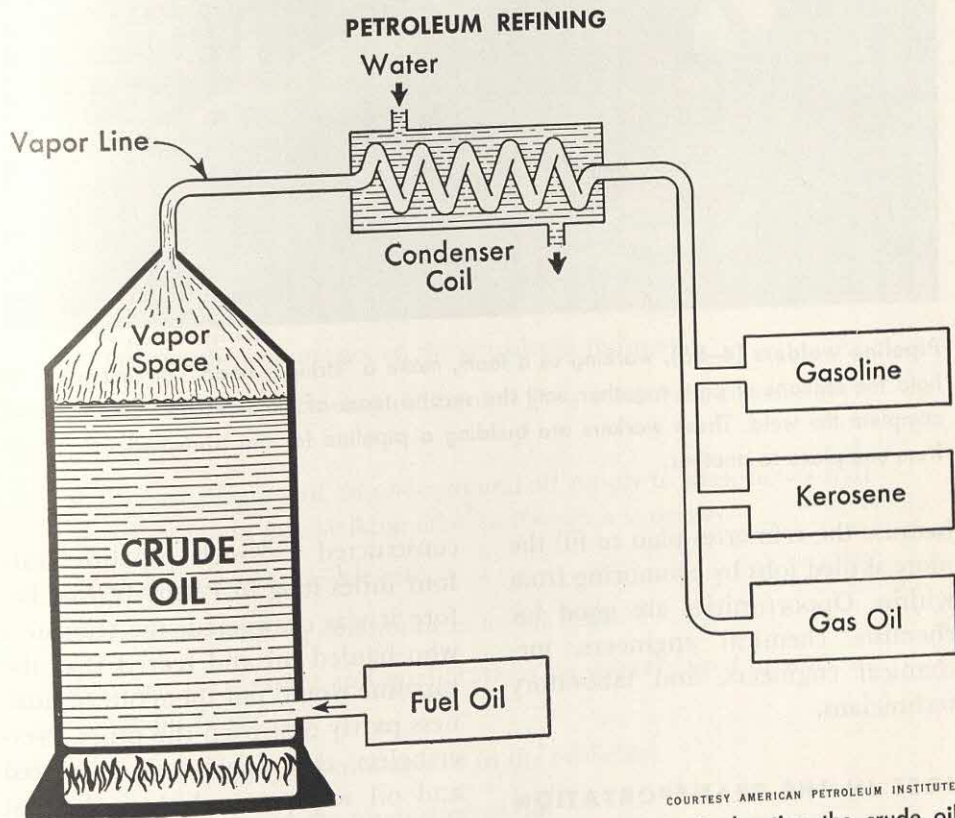
The petroleum-refining industry in 1951 was operating at record levels, and the operating capacity of the refineries was estimated at about 61½ million barrels of crude oil daily. The Nation's 370 refineries employed 202,000 wage and salary workers, who turned these unprecedented quantities of crude petroleum into gasoline, kerosene, fuel oil, and other basic products. Most states refine oil, but five states account for two-thirds of the oil output—Texas, California, Pennsylvania, New York, and Louisiana. Of all refinery workers, 23 percent are employed in Texas and 15 percent in California. The refineries operate

#### DISTRIBUTION OF OIL WORKERS IN PRODUCTION AND REFINING

Occupational Group	Percentage in Production	Percentage in Refining
Administrative	8	6
Professional and technical	3	10
Clerical and sales	7	18
Skilled	26	23
Semiskilled	53	26
Unskilled	1	17

24 hours a day 7 days a week, so that many process workers are on shifts at night and week ends. Because there is little seasonal variation in the refining industry, nearly all workers have year-round jobs. Earnings of production workers in petroleum refining are among the highest in industry—\$80 for a 40-hour week compared with \$64 for a 40.9-hour week for all manufacturing industries, as of February 1951. Working conditions in refineries are comparatively

safe, as the accident rate is only half the average for manufacturing as a whole. No great physical effort is required for most refinery jobs, but some workers must climb ladders to considerable heights and others must be exposed to heat and unpleasant odors. Plant jobs are filled almost exclusively by men. Women work in the offices and laboratories. Labor-turnover rates in refining are among the lowest in industry. New plant workers generally start as laborers



COURTESY AMERICAN PETROLEUM INSTITUTE

In its simplest form the process of petroleum refining consists in heating the crude oil in a still to its boiling point, passing the vapors from the boiling oil through condensing pipes, and condensing the vapors into liquids. The approximate yield of products from 100 gallons of crude oil is: gasoline (44 gallons); fuel oil (36); coke, asphalt, paraffin wax, etc. (8); kerosene (6); lubricants (3); and loss (3).





COURTESY STANDARD OIL CO. (N. J.)

**Pipeline welders (4-85)**, working as a team, make a "stringer bead," or first weld, to hold the sections of pipe together until the second team of welders can come up and complete the weld. These workers are building a pipeline for the transportation of oil from one place to another.

because the refineries plan to fill the more skilled jobs by promoting from within. Opportunities are good for chemists, chemical engineers, mechanical engineers, and laboratory technicians.

### **JOBS IN THE TRANSPORTATION OF OIL**

The transportation of petroleum and its products very early became a problem. In 1865 Samuel Van Syckel

constructed a 2-inch pipeline only four miles long in Pennsylvania. Before it was completed, the teamsters who hauled oil and feared that the pipeline would put them out of business partly destroyed the pipes. Nevertheless, the pipeline was restored and oil was pumped through it at the rate of 30 to 40 barrels an hour.

There are nearly 130,000 miles of pipelines in the United States for the transportation of petroleum. The chief trunk lines now run from

Oklahoma and Texas to Chicago and New York City. The "Big Inch," completed during World War II, is 24 inches in diameter, extends from Texas to New York, and can deliver 310,000 barrels of oil a day. *Line walkers* (7-49) earn their living by patrolling the pipelines, going on foot over the sections and watching for leaks and breaks.

Seamen on ocean tankers, oilers, and tank barges carry oil to all parts of the world. The largest cargoes of oil are carried on the tank ships, whose capacity reaches as high as 150,000 barrels per single loading. About one-third of the trade of the American Merchant Marine is represented by the transportation of pe-

troleum and its several products.

Railroad workers are responsible for the tank cars that carry from 8000 to 10,000 gallons each all over the United States.

Drivers of the motor-oil trucks seen about town fill their trucks at "bulk plants," near large consuming centers. These plants consist of rows of high-domed steel oil tanks. The truck drivers deliver gasoline and oil directly to the service stations in a city and keep the service-station tanks filled regularly. Each pump at a service station is supplied with an 1100-gallon tank buried in the ground. The *automobile-service-station attendant* (7-60) measures the gasoline into automobile tanks.

### For Discussion

1. Discuss the importance of the petroleum industry.
2. Explain how petroleum and natural gas are naturally stored underground.
3. Draw a diagram of an underground oil supply to show how a well driller might miss striking oil even though it is nearby.
4. How do workers locate oil?
5. Describe working conditions in an oil field.
6. What preparation and qualifications do workers need to work in the oil fields?
7. What type of worker is needed in the oil fields?
8. Describe jobs in the production of oil.
9. What type of worker is needed in refining oil?
10. Tell how oil is transported and what workers are needed for that work.



## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the petroleum industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Make a poster advertising fuel oil.
<b>BUSINESS:</b>	Discuss the management of a branch filling station in your community.
<b>ENGLISH:</b>	Tell the story of the oil pipeline from Texas to New York, known as the "Big Inch."
<b>HEALTH:</b>	Report on the health and hazards of workers in the oil fields compared with the health and hazards of workers in refineries.
<b>HOME ECONOMICS:</b>	Make a list of the petroleum products that the home-maker uses daily.
<b>LANGUAGES:</b>	Compare the production of oil abroad with that in this country.
<b>MATHEMATICS:</b>	What is the gasoline tax in your community? Figure the expected total return for the next 12 months.
<b>MUSIC:</b>	If you were sending musical recordings to an oil worker in an oil field miles away from a town, what type of selection would you choose? Why?
<b>OCCUPATIONS:</b>	Describe any local occupations which a young man might enter who is interested in the petroleum industry—gas-station attendant, tank-truck driver, etc.
<b>SCIENCE:</b>	Demonstrate different products that result from the refining of crude oil.
<b>SHOPWORK:</b>	Demonstrate the types of oils and greases used on automobiles.
<b>SOCIAL STUDIES:</b>	Discuss one of the following subjects: The Discovery of Oil in America; The Growth of the Petroleum Industry; or The Benefit of Petroleum to Mankind.

### What to Read

*Flowing Gold—The Romance of Oil*, John J. Floherty. J. B. Lippincott Company, Philadelphia, 1945. 255 p.

*Occupational Outlook Handbook*. Bureau of Labor Statistics Bulletin 998. U.S. Government Printing Office, Washington 25, D.C., 1951. 574 p. (\$3.00) (See pages 331-341, "Petroleum Production and Refining Occupations.")

*Opportunities in the Petroleum Industry*, Gene Patrick. Vocational Guidance Manuals, Inc., New York, 1952. 95 p.

*Our Oil Hunters*, Irving Krump. Dodd, Mead and Company, Inc., New York, 1948.

*Vocational Training in Oil and Gas Production*. American Petroleum Institute, New York, 1943. 14 p. (Free)



# CHAPTER 33 THE TRANSPORTATION INDUSTRIES

Whether we travel by land, water, or air, we are inspired by an atmosphere of adventure. This spirit of adventure is one of the factors that attract young people to the occupations in the transportation industries. Men in transportation today are continually finding new ways to increase speed and improve conditions of travel. We have become accustomed to fast trains, fast busses, fast planes, and fast ships and still look for more improvements. Workers on these different types of conveyances in the transportation industries make their living by carrying freight and passengers long or short distances.

Since the kinds of transportation are unlike as to mode of travel and work done by the employees, they will be discussed separately under the following four large divisions: (1) Railroad Transportation, (2) Motor-vehicle Transportation, (3) Water Transportation, and (4) Air Transportation.

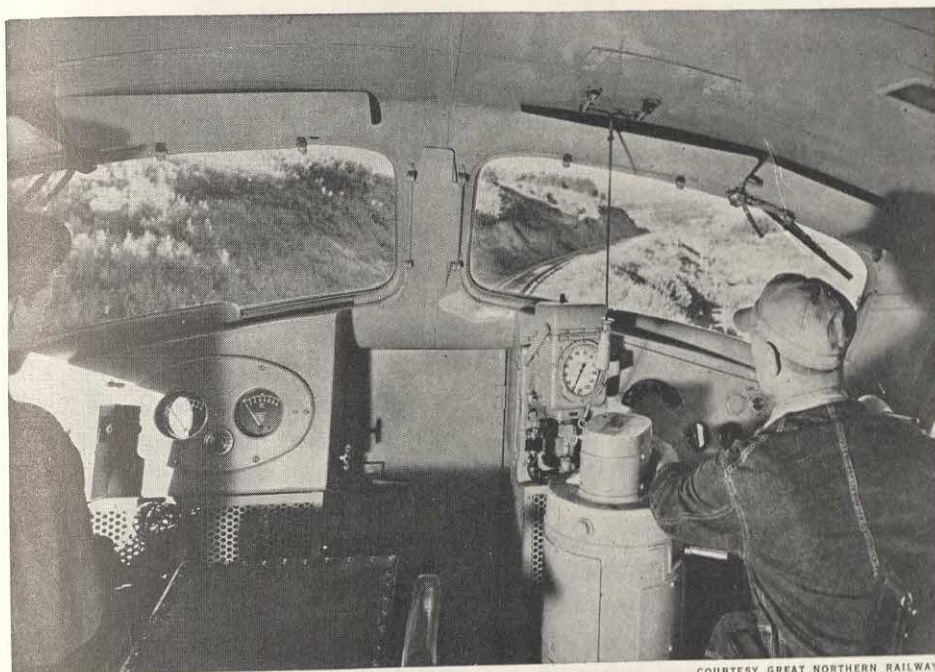
## RAILROAD TRANSPORTATION

Streamlined, air-conditioned trains, built of strong new steel alloys,

drawn by steam, electric, or Diesel locomotives, cruise along at 70 to 90 miles an hour. In the United States railroads operate 43,000 locomotives, 1,800,000 freight cars, and 37,000 passenger cars. To keep these units in use requires a million and a half employees—engineers, firemen, conductors, brakemen, telegraphers, clerks, and an army of other workers. One-third of these employees work for six big companies—the Pennsylvania; New York Central; Atchison, Topeka and Santa Fe; Southern Pacific; Baltimore and Ohio; and Union Pacific.

### Government regulation of railroads.

By a decision of the Supreme Court in 1886, the railroads, although privately owned, were charged with a public duty. Soon after, the Interstate Commerce Commission (ICC) was created to control many features of railway operation—for example, passenger and freight rates. Without ICC's permission, a railroad may not build a new line or abandon an old line. The Commission also passes on matters of safety, accounting, and selling of securities. The Railroad Retirement Board of the Federal Government supervises the retire-



COURTESY GREAT NORTHERN RAILWAY

A locomotive engineer (5-41) and fireman (5-42) on a Diesel engine get a view of the Rocky Mountains ahead as the train moves westward. The engineer takes his orders from the conductor, starts the train upon signal, and controls it according to train orders and semaphores along the route. Engineer jobs are filled by promotion of qualified senior firemen. Physical examinations are required periodically. Locomotive engineers belong to one of the oldest labor unions—the Brotherhood of Locomotive Engineers, founded in 1863.

ment and pensioning systems that are in effect.

Railroads are divided geographically by the Commission into three districts: eastern, southern, and western. Operating railways are divided into the following three classes, according to the amount of their annual operating revenues: Class I, 127 line-haul companies with \$1,000,000 or more operating revenue; Class II, 171 line-haul companies with \$100,000 to \$1,000,000

operating revenue; and Class III, 166 line-haul companies with less than \$100,000 operating revenue. The bulk of railroad business is done with the Class-I railroads represented by 127 companies.

**Importance of railroading.** As the railroads expanded their systems, industries sprang up along their lines. Vast territories were thus opened up in the West, and wide distribution of manufacturing industries was brought about all over the country.



Freight revenue for the railroads in 1950 amounted to more than 8 billion dollars—almost 10 times as much as was received from passenger revenue.

Many young, inexperienced workers find opportunities in railroading. According to estimates made by the Bureau of Labor Statistics, about 400,000 workers without previous experience in railroading are hired annually by the Class-I roads. Two-thirds of these persons are employed as track workers or in other laboring jobs.

**Railroad organization.** Those looking forward to railroading as a career should be aware of the major departments of railroad work. The separate railroads control properties ranging in size from only a few miles of tracks to large systems covering 10,000 miles of road and employing 100,000 workers. Although the organizations that operate these roads differ, there are, in general, eight major departments in which workers are employed.

*The executive department*, headed by the president and his staff, makes policies intended to safeguard the financial condition of the company.

*The operating department* employs the most workers and is the largest department in railroading. This department operates the trains, the yards, and the freight and passenger stations. Under *general superintendents* and *division superintendents*—each in charge of a division of the railroad—are *roadmasters* (0-

98), *dispatchers* (0-98), and many division officers. *Station agents* (1-44), *locomotive engineers* (5-41) and *firemen* (5-42), *conductors* (0-92), *brakemen* (5-38), *flagmen* (5-38), and *trainmen* assigned to a division report to the division officers.

*The engineering department* takes care of the construction and maintenance of fixed property—roadway, tracks, yards, bridges, buildings, and stations. A *section foreman* (0-98) is assigned to the maintenance of a certain section of track.

*The mechanical department* maintains the railroad's rolling stock—locomotives, passenger cars, and freight cars. Large railroads are able to build their own locomotives and freight cars. All railroads maintain repair shops—each in charge of a *master mechanic* with many craftsmen, *machinists* (4-75), *boilermakers* (4-83), *patternmakers* (5-17), and *blacksmiths* (4-86), working under his supervision.

*The traffic department* solicits freight and passenger business and is the sales department of the railroad. This department determines the freight rates and passenger fares and issues timetables and advertising literature.

*The law department* handles matters requiring a special knowledge of law—deeds, contracts, legal documents, and railroad representation in court. This department also handles claims for personal injury and property damage.

*The accounting and treasury de-*

*partment* handles the financial affairs of the railroad—receipts and expenditures of money, auditing of accounts, issuing pay checks, and preparing statistical reports.

*The purchasing and stores department* keeps the railroad supplied with materials by the economical purchase of thousands of different items. This work also includes proper storage and distribution of materials, keeping inventories, and taking care of orders.

In each of these major departments, officers and employees must have a certain amount of special training. In the professional departments—law and engineering—college-trained men are required, but in other departments employees must have certain skills or technical knowledge.

Railroad workers have to exercise more judgment and make more important decisions than most workers in other industries. They must handle trains safely and make use of many dispatching, signaling, and switching operations that are often matters for individual determination. Consequently, railroads demand dependable men of good character and judgment, in addition to experience and ability. They must also have good health, pass a physical examination, and be a high school graduate (except for labor jobs), and many must be able to meet and deal with people.

**Unions.** Most railroad workers belong to labor unions. Collective bar-

gaining between the unions and the railroad companies has resulted in contracts affecting wages, hours of work, apprenticeship, and seniority. Seniority rules (number of years employed by a company) affects both promotions and lay-offs. Nonoperating railroad workers are on a 40-hour week, but operating workers—train and engine crews—are on “runs” reckoned by miles or hours away from base. Pay depends upon many factors, such as skill, experience, and safety. For example, a locomotive engineer in 1949 earned \$12.97 a day (base rate) compared with \$11.29 for a fireman. All railroad employees become eligible for retirement at 65 years of age.

**Opportunities.** All railroad workers, who generally enter the industry between the ages of 21 and 25 years, start at the bottom of their departments and work up step by step. For the more responsible and higher-paid positions, advancement comes slowly because of seniority and experience requirements. For the competent worker, however, progress is more sure because he is protected by the seniority rulings. Opportunities for young women in railroading are limited, but many are employed as stenographers, typists, comptometer operators, telegraph operators, and in other office positions. In general, railroad jobs fall into five classes briefly described as follows:

*Executives and officials.* About 1 percent (15,000 persons) of the total workers are the executives and offi-



cials of the railroads. These men have had years of experience in the industry.

*Professional and clerical workers.* Approximately 127,000 workers, or 17 percent of all employees, are the clerks and scientific specialists who have been trained in universities and business schools.

*Maintenance of way and structures.* One-fifth of all employees, 267,000 persons, are responsible for the upkeep of the roadbeds and bridges of the railroads—*trackwalkers* (9-49), *bridge inspectors* (5-76), *rail-flaw-detector-car operators* (5-76), *way inspectors* (5-76). They learn their work through apprenticeship or on-the-job training.

*Maintenance of equipment and stores.* Approximately 365,000 persons, or 27 percent of all railroad employees, are concerned with railroad equipment and stores. These persons learn their trades through 4 years of apprenticeship.

*Transportation workers.* Approximately 460,000 persons, or 35 percent of all employees, are the more familiar workers who are responsible for passengers, freight, and the movement of trains. This is the largest railroading group. For example, an engine crew consists of a *locomotive engineer* (5-41) and a *locomotive fireman* (5-42). A train crew consists of the *conductor* (0-92), who is in charge of the train, and two or three *brakemen* (5-38) to assist him. A yard crew has a *yardmaster* (0-98) and two or more *switchmen*

(5-44). With responsibility for human life in their hands, these workers must prove to be prompt, quick-thinking, equal to any emergency, dependable, and willing to follow directions and orders exactly.

### MOTOR-VEHICLE TRANSPORTATION

Workers in motor-vehicle transportation are employed in a variety of jobs required to keep busses, taxicabs, and trucks on the road. The industry covers all types of public bus service, taxicab service, truck lines engaged in local or long-distance hauling, and the operation of all types of public warehousing and storage establishments. Other workers are employed in related fields of transportation, such as the improvement of highways. Four-fifths of our state highways are now surfaced, and more superhighways are being planned because heavy motor vehicles require roads that are solid and safe. For example, the Pennsylvania Turnpike of 160 miles, from Harrisburg to Pittsburgh, opened in 1940 at a cost of 70 million dollars, eliminated 939 road and street intersections and 12 railway crossings. The 118-mile New Jersey Turnpike was opened in 1953.

**Bus service.** Bus companies employ more than 230,000 workers. Intercity motorbus companies operate more than 32,000 busses; city and local companies operate 57,000 busses; and, in addition, 3200 sightsee-

ing busses and 90,000 school busses carry passengers. Each bus requires a driver, but many other workers are needed to provide the service demanded. *Bus drivers* (5-36), who operate large automobiles or omnibuses to transport passengers from one place to another according to a definite time schedule, must be at least 21 years of age, reliable, steady, and courteous. A *bus baggageman* (1-43) travels on the bus with the passengers to take care of their baggage. *Bus dispatchers* (1-18) supervise the movement of busses from one location to another and issue orders for station departure at certain hours. *Ticket agents* (1-44) sell tickets and route passengers to desired destinations.

**Taxi service.** A *taxi driver* (7-36) in any good-sized community must have a chauffeur's license and be at least 18 years of age. Most states have laws that set standards for taxi drivers to meet. In large cities a taxi driver must hold a city license and be protected by liability insurance. He must be alert for fares and know the names and locations of the city streets and important places in the city. He must also keep his taxicab in good repair. The taxicab driver's earnings depend upon the amount of business he gets, plus his tips. Companies usually pay a commission based on a percentage of receipts. In cooperative organizations, owner-drivers keep the receipts and pay a lump sum monthly to cover the company's general services.

**The trucking industry.** With 8 million trucks in operation, trucking service has become a great industry. The industry is not centralized, because trucks all over the nation offer door-to-door service. In the 1920's anyone who owned a truck could become a trucker. However, that system proved so unsatisfactory to both customers and truckers that the Government entered to regulate the industry. Various states have enacted laws to protect the trucking industry and those who use trucking services. A highway carrier (a truck) must now have a franchise (legal right) to operate within the borders of a state. The franchise is obtained from the state regulatory commission. The state may thus limit the number of truck operators, assure the public of adequate service, and allow the truckers in the state a sufficient volume of trade to stay in business.

If their routes cross state lines, it is necessary to have a franchise from the Interstate Commerce Commission, Washington, D. C. Such permits insure the customer of regular and safe service. The trucker is required to obey safety rules, carry insurance, operate a regular service, file a schedule of rates, and make reports.

People like motor-trucking service because it eliminates many steps in packing, crating, and handling goods. Railroads also offer door-to-door service, but their lines are supplemented with motortrucks for that





COURTESY ASSOCIATION OF AMERICAN RAILROADS



COURTESY SOUTHERN PACIFIC RAILWAY

With  $6\frac{1}{2}$  million trucks in operation, the trucking business has become a great industry. **Truck drivers (7-36)** need good health, strong bodies, good hearing and eyesight, steady nerves, and even tempers. Educational requirements are not high, but workers must be at least 21 years of age and able to pass the test for truck-driver's license.

purpose. Truck delivery is especially desirable in handling milk, fresh fruits, vegetables, and livestock on hauls of 300 miles or less.

Workers may enter several types of trucking service. Intrastate carriers work entirely within a single state. Interstate carriers work across state lines. Local cartage carriers operate within a city and its suburbs. Over-the-road common carriers operate between cities, either in or out of state, carrying all kinds of goods over regular routes, serving the general public over irregular routes, or offering a combination of these services. Over-the-road contract carriers make contracts with their customers—chain stores, dairies, etc.—for hauling. Local “for hire” truckers usually move furniture and goods from house to house and seldom have a very high degree of skill unless packing is required. Firms primarily engaged in “for hire” service provide only a minor part of trucking employment.

More than four-fifths of the trucks in operation, except on farms, are used by manufacturers and service plants for the delivery of their own goods and services. One-third of a million trucks are operated by railroads and public utilities; bakery, confectionery, and florist houses; dairy farms; oil and gas companies; and builders and contractors. Forty companies operate fleets of more than a thousand trucks each, but there are 25,000 companies that have only 8 trucks each.

Jobs in the trucking industry depend upon one's interests and aptitudes. A person may start in the shop by repairing trucks, in the office by accounting for operations, or on the loading platform by taking care of freight. A few women are employed as *dispatchers*, *unloaders* of packaged goods, and *drivers* within city limits.

Employers prefer young, energetic men. Men who plan to operate their own trucking business should first get a job with a trucking company to learn from the inside how the business works and what is required for success.

Every community has *truck drivers* (7-36). A light-truck driver drives a truck of less than 3-ton capacity and does not make deliveries over an established route. A heavy-truck driver drives a truck of more than 3-ton capacity to haul heavy loads, such as machinery, oil, gasoline, lumber, bulk milk. On long runs he may have an alternate driver, and at night one may sleep in a bunk over the cab while the other drives. Truck drivers for department stores receive the least pay but have regular hours. Those on the road have long and irregular hours but are well paid. Over a million workers are members of the “Teamsters’ Union,” otherwise known as the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America.

To be a good truck driver one needs good health, a strong body,



good hearing and eyesight, steady nerves, and an even temper. In addition, he needs to have a willingness to work, an interest in the trucking business, and a fair education. Educational requirements in trucking are not high, but both truck drivers and mechanics are expected to have had some experience and to have finished grade school and had 1 or 2 years of vocational school or high school. A truck driver should be 21 years of age and be able to pass the test for a truck driver's license. Training for the work is usually offered through apprenticeship at the yard of a plant in groups. Many vocational schools offer supplementary training.

A small trucking company needs a *business manager*, a *clerk-dispatcher*, a *truck driver* and *helpers*, or *loaders*, who are laborers. A large company will have a *terminal superintendent* in charge of the office, a *terminal foreman* to supervise the handling of the cargo, a *dispatcher* who supervises the truck drivers and their routes, and an *inspector* who checks the trucks. A list of the work-

ers employed in the trucking industry is given below.

## WATER TRANSPORTATION

Water transportation furnishes a variety of jobs for all kinds of workers. A modern steamer, even a freighter, has an amazing variety of machinery; and its plumbing, like the roots of a tree, extends to all parts of the ship. The fuel is usually oil. The power plant, sometimes larger than that of a small city, usually generates light and power. Complicated ice-making machinery provides low temperatures for large cold storage rooms. Electric machinery enables the crew to hoist the anchor and load and unload the vessel. Elaborate radio equipment makes it possible to receive and send telegrams and determine the latitude and longitude of the ship.

Passenger liners make most of their trips back and forth between the same ports. Thus seamen employed on these ships are able to return to their home ports at almost regular intervals.

## OCCUPATIONS IN THE TRUCKING INDUSTRY

Accountant (0-01)  
Auto mechanic (5-81)  
Blacksmith (4-86)  
Carpenter (5-25)  
Clerk (1-05)  
Dispatcher (1-18)  
Driver (7-36)  
Electrician (5-81)  
Foreman (5-95)

Inspector (7-49)  
Machinist (4-75)  
Platform foreman (5-95)  
Rigger (5-88)  
Storekeeper (1-38)  
Traffic clerk (1-19)  
Traffic manager (0-98)  
Tire repairman (4-57)  
Warehouse foreman (5-95)

Cargo vessels also make scheduled trips from and to the home port, or they may visit many ports. On boats that visit many ports the return to home port is a longer interval.

Tramp steamers have no regular timetable. They are sent to any port where a cargo can be loaded and carried away. When a tramp ship will return to its home port is always uncertain.

**The crew's duties.** In all steamers the crew is divided into three grades, much as in the Navy: (1) officers, (2) noncommissioned officers (petty officers), and (3) seamen. The *master* (0-88), or captain of the ship, is licensed by the Government to have complete charge of his vessel. He obtains his license by examination through the Bureau of Marine Inspection and Navigation, U. S. Department of Commerce. He is responsible for the safe navigation of the ship, supervision of officers and crew, keeping the log (record of the day's events), and other duties. The *first mate* (0-88), who is next in command, supervises the work of the deck crew and must be licensed also. The *second mate* (0-88) assists the first mate, and he too must have a license. The *marine engineer* (0-88) operates and repairs all types of engines and machines and stands watch in the engine room. He is responsible directly to the *chief marine engineer* (0-88) and is designated as first-assistant engineer, second-assistant engineer, third-assistant engineer, or fourth-assistant engineer ac-

cording to the grade of government license he holds as a result of examination and experience. The *purser* (0-88) takes care of the commercial end of the ship's obligations and attends to the social activities arranged for the passengers.

Like the noncommissioned or petty officers of the Navy, the next in rank are the men who handle the crew's duties. Finally, the *able seamen* (5-48) perform all regular duties required in deck service of a ship, as well as stowing and removing cargo from the hold. They must have a Government certificate to obtain work. The *deckhand* (9-48) has manual and labor duties aboard ship. The *marine fireman* (7-70) stokes the boiler on a ship. The *marine oiler* (7-71) oils and greases moving parts of the ship's engines. The *mess boy* (2-27) sets the tables for meals and waits on the crew.

The modern ocean liner is similar to a large, sumptuous hotel. The *chief steward* (2-28) plans the meals and purchases kitchen and dining-room supplies and food. He supervises the kitchen, dining room, cabins, and staterooms and has charge of the cooks, waiters, stateroom stewards and stewardesses, barbers, manicurists, printers, and musicians.

**Employment.** Merchant seamen are employed on all commercial vessels that carry passengers, freight, and mail. They find work through the "shipping agencies" or through seamen's employment agencies that are managed by governmental, commer-





COURTESY READING RAILROAD

Cities with a waterfront have opportunities for workers in water transportation. This small tugboat in New York harbor brings to berth at port the large ocean liners that dock at New York. Every ship, large or small, has a **master (0-88)**, or captain, who is licensed by the Government and has complete charge of his vessel. The **first mate (0-88)** is next in command.

cial, union, and welfare services. The seamen pledge themselves to "give faithful obedience to the lawful commands of the officers." After 6 months' service as *deck boy* (2-86), who is assigned to cleaning decks, a man may become an ordinary seaman at \$190 a month, including living expenses. After 1 to 3 years he is eligible to obtain a certificate as an able seaman at \$225 a month.

**Preparation.** To prepare for marine jobs, one needs regular school train-

ing as for land jobs. Those interested in making a career of the sea should consider attending one of the five merchant-marine schools listed below:

- California Maritime Academy,  
(state), Vallejo, California
- Maine Maritime Academy (state),  
Castine, Maine
- Massachusetts Maritime Academy,  
(state), Hyannis, Massachusetts
- New York State Maritime College  
(state), Fort Schuyler, New York



COURTESY "SATURDAY EVENING POST," PHOTO BY PAT COFFEY

**An airport-control operator (0-61)** in the control tower at an airport directs take-offs and landings of aircraft by radio, lights, and flags. He establishes radio contact with incoming transports and issues instructions and weather information.

U. S. Merchant Marine Academy,  
(federal), Kings Point, Long Island,  
New York

The U. S. Maritime Commission,  
Washington 25, D. C., gives examinations for entrance to the federal school, and state examinations are set for the state schools. In general,

cadets are appointed for a 4-year course and receive \$65 per month while in training. They must be 18 to 25 years of age for state schools or 17 to 21 years of age for the federal school; have 16 high school units; be physically sound and of normal weight and height. Training is of-



ferred for the deck and engineering departments. Upon graduation a cadet is eligible for examination as *third mate* or *third-assistant engineer*.

### AIR TRANSPORTATION

In 1903 Wilbur and Orville Wright made their famous flight in a biplane at Kitty Hawk, North Carolina. In 1927 Charles A. Lindbergh made his record 3600-mile flight alone across the Atlantic Ocean in 33½ hours. During World War II progress in aviation exceeded even the dreams of the inventors, and new records are continually being made.

The Civil Aeronautics Administration (CAA), Washington, D. C., encourages the development of civil aeronautics and air commerce, applies safety standards, collects and interprets aviation information, and plans federal airways. It also assists in civilian flight training, plans a national system of airports, and issues licenses for qualified workers in aviation. The CAA has approved 118 technical schools for the training of aviation mechanics.

Most jobs in aviation are highly competitive. On regular air lines a large airplane carries a crew consisting of a captain, or *pilot* (0-41); a *co-pilot* (0-41), sometimes called a "captain in training"; a *navigator* (0-41), who directs the course of the airplane in flight; an *engineer* (5-80); a *mechanic* (5-80); a *steward* (2-25); and others. A still larger force works

on the ground. It has been said that in military aviation at least 12 men are required on the ground for every man in the air. The ground crew overhauls the airplanes after each flight, makes repairs, and maintains the field and its buildings and shops. A few aviation workers are described below.

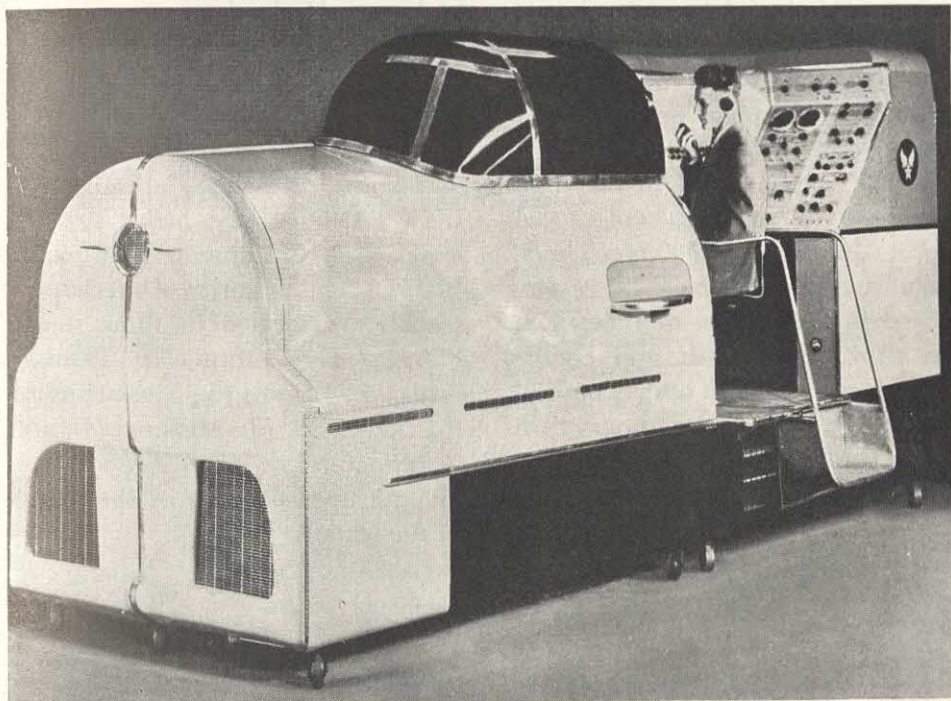
**Meteorologists (0-35)** forecast weather conditions. They work in close cooperation with the U. S. Weather Bureau. Applicants must be at least 21 years of age and have had 2 to 4 years of college training in mathematics, physics, chemistry, and meteorology. No licenses are required, since hiring standards of the air lines determine the qualifications needed.

**Airport-control operators (0-61)** are required to have CAA certificates, and most airport-control operators are employed by the CAA's Federal Airways Service and assigned to particular airports to supervise all flights in their area.

**Flight engineers (5-80) and flight mechanics (5-80)** are now carried on airplanes of 80,000 pounds or more.

**Airplane hostess (2-25).** (See pages 152 and 273.)

**Commercial airplane pilot and co-pilot (0-41).** The captain, or pilot, is in complete charge of the plane, crew, passengers, and cargo while they are in the air. His assistant, the first officer, or copilot, shares the job of piloting the plane and operating the controls and the radio. This work is technical and exacting because it



OFFICIAL DEPT. OF DEFENSE PHOTO

A Link Jet Trainer provides realistic ground training for Air Force pilots. It is a combination of three trainers: flight, engine operation, and radio navigation. The instructor's position is behind the cockpit. The trainer does not move on its fixed base but includes all of the controls, instruments, and indications of high-speed jet aircraft. The instructor can produce a variety of conditions which might be encountered in actual flight.

involves great responsibility for life and property. Pilots are well paid—\$700 to \$1000 a month—but their years of earning are comparatively short. Copilots make half as much. Pilots in related flying services do aerial photography and surveying, skywriting, advertising, banner towing, crop dusting and spraying, and forest-patrol work. Pilots must obtain pilot certificates and licenses from the CAA. An air-line pilot must be a high school graduate, at least 23 years of age, and have 1200 solo

hours of flying to his credit. Copilots need the same qualifications.

**Airplane mechanic (5-80).** Air lines assign their mechanics either to (1) line maintenance or (2) overhaul work. Before each flight, the line-maintenance mechanics warm up the engines, watch the controls, check the radios, and inspect the plane inside and out. Most mechanics for planes other than airline planes are in similar work. Engine-overhaul work for air liners is done at the main base. Mechanics are re-



quired to have CAA mechanic certificates, either "A" (airplane), or "E" (engine), or both.

Half of all airplane mechanics are employed by the 31 major air lines and half are employed in the 5000 fixed-base services, schools, and shops. More than 70,000 mechanics, excluding aircraft plants, were employed in 1950. Most of these men are all-around aircraft and engine mechanics paid on an hourly basis of 40 hours per week. Beginners earn about \$1.35 an hour.

Men prepare for work as airplane mechanics through apprenticeship

of 4 years. High school or vocational school training or experience in automotive repair work are assets in competing for apprentice jobs. To obtain a license, a man must attend one of the 118 schools approved by the CAA, must have had 2 years of experience, and must pass an examination. The majority of mechanics' schools are located in these states: Florida (17), California (16), Pennsylvania (9), Illinois (6), Massachusetts (6), New York (5), Missouri (4), and Washington (4). The CAA will provide an up-to-date list of the names of the schools.

### For Discussion

1. Name the six big railroad companies that employ one-third of all the railroad workers.
2. Why was the Interstate Commerce Commission created?
3. Name eight departments in railroad organization.
4. What are some of the opportunities in railroading?
5. Describe opportunities for employment with bus companies.
6. Describe how trucking service has now become a big industry.
7. Discuss the duties of the crew of a good-sized steamship.
8. In what states are the merchant-marine schools located?
9. What does a commercial airplane pilot do?
10. How does one prepare to become an airplane mechanic?

### What to Read

*Career; the Annual Guide to Business Opportunities*, William A. Douglass, editor. Career Publications, Inc., 52 Vanderbilt Ave., New York 17, N.Y., 1954. 198 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the transportation industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Collect and display travel posters of vacation resorts in the United States.
<b>BUSINESS:</b>	Discuss the reports that a conductor on a railroad makes at the end of each trip, or tell how transportation companies sell their services.
<b>ENGLISH:</b>	Write a brochure for a local transportation company describing the beauties and delights that your community offers the tourist.
<b>HEALTH:</b>	Describe provisions for sleep for Pullman passengers on trains, for passengers on busses, and for long-distance truck drivers.
<b>HOME ECONOMICS:</b>	Compare the jobs of air-line hostess, train hostess, and tea-room hostess.
<b>LANGUAGES:</b>	What language difficulties do tourists experience while traveling abroad? How has aviation brought us closer to the peoples in other countries?
<b>MATHEMATICS:</b>	Collect timetables of several different companies and figure the most economical way to travel 1000 miles away and return. Consider money and the value of time.
<b>MUSIC:</b>	Name at least one song that concerns each of the following: airplanes, automobiles, railroads, boats, travel.
<b>OCCUPATIONS:</b>	In your community, find out what beginning wages are paid new workers in transportation jobs. (Avoid asking about individual salaries.)
<b>SCIENCE:</b>	Discuss either the Diesel engine or the jet engine.
<b>SHOPWORK:</b>	In your community, what shop training would a transportation worker find most useful?
<b>SOCIAL STUDIES:</b>	Discuss any one of these subjects: Historic Modes of Travel; Present-day High-speed Luxury Travel; or Notable Aviators.



- Careers in Aviation*, Samuel Burger. Greenberg: Publisher, Inc., New York, 1946. 209 p.
- Employment Opportunities in Aviation Occupations*
- Part I: *Postwar Employment Outlook*. Bureau of Labor Statistics Bulletin 837—1. U.S. Government Printing Office, Washington 25, D.C., 1945. 36 p. (10 cents)
- Part II: *Duties, Qualifications, Earnings, and Working Conditions*. Bureau of Labor Statistics Bulletin 837—2. U.S. Government Printing Office, Washington 25, D.C., 1946. 45 p. (20 cents)
- Employment Outlook in Railroad Occupations*. Bureau of Labor Statistics Bulletin 961. U.S. Government Printing Office, Washington 25, D.C., 1949. 52 p. (30 cents)
- Guide to the Engineering Professions in the Aviation Industries*. Institute of the Aeronautical Sciences, Inc., 2 E. 64 St., New York 21, N.Y., 1954. 64 p.
- Motor Truck Facts*. Automobile Manufacturers Association, Detroit (Annually). (Free)
- Our Industrial Age*, H. M. Boodish. McGraw-Hill Book Company, Inc., New York, 1949. 383 p. (See Chapter 4, "Transportation in Our Industrial Age.")
- Opportunities in Aviation*, Seth Babits. Vocational Guidance Manuals, Inc., New York, 1949. 96 p.
- Opportunities in Travel*, Don Short. Vocational Guidance Manuals, Inc., New York, 1953. 96 p.
- Occupational Outlook Handbook*. Bureau of Labor Statistics Bulletin 998. U.S. Government Printing Office, Washington 25, D.C., 1951. 574 p. (\$3.00) (See pages 404-434, "Railroad Occupations" and pages 435-456, "Air Transportation Occupations.")
- Railroads. (Ask for current bulletins about railroads.) Association of American Railroads, Public Relations Division, Transportation Building, Washington, D.C.
- Shipboard Occupations*. Michigan Unemployment Compensation Commission, Detroit, 1949. 17 p.
- Training School Bus Drivers*, American Automobile Association and U.S. Office of Education Bulletin 233. U.S. Government Printing Office, Washington 25, D.C., 1945. 162 p. (30 cents)

**P**rimitive people used to send messages beyond the range of the human voice. They either thumped the earth and listened with an ear to the ground, beat upon a hollow log, built signal fires, or made smoke signals. In ancient cities couriers (runners) were stationed at posts along the roads to receive and carry news by word of mouth—a kind of relay race. In 425 B.C., Herodotus, the Greek historian, described them thus: “Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds.” These familiar lines are carved over the front of the main post office in New York City. Today we are fortunate in having a communications industry whereby we are informed of the news around the world as soon as it happens. Thanks to electricity and electronics, we get election returns as fast as votes are counted. Hearing proceedings have been televised in Washington as they happened.

In this chapter some of the communications jobs are briefly described under the sections on (1) telegraphy, (2) telephone work, and (3) radio, radar, and television.

### TELEGRAPHY

The word “telegraph,” meaning “to write from far off,” comes from two Greek words—“tele” (far off) and “graph” (to write). Samuel Morse invented the magnetic telegraph in 1832, but it was not until 1844 that the first telegraphic line of communication was installed from Washington to Baltimore, a distance of 40 miles. In 1856 a number of enterprising companies consolidated to form the Western Union Telegraph Company. Today the Western Union has become a national telegraph system, reaching nearly every community in the United States and furnishing work for thousands of people. More than 2 million miles of wire make up the network of this communication system. The dot and dash code, devised by Morse, is still used for sending messages, and anyone can soon learn to read the code by listening to the click of the telegraph instrument. Improvements in the telegraphic process have increased the capacity of the system. For example, the multiplex telegraph system permits eight messages to be sent at the same time over one wire.

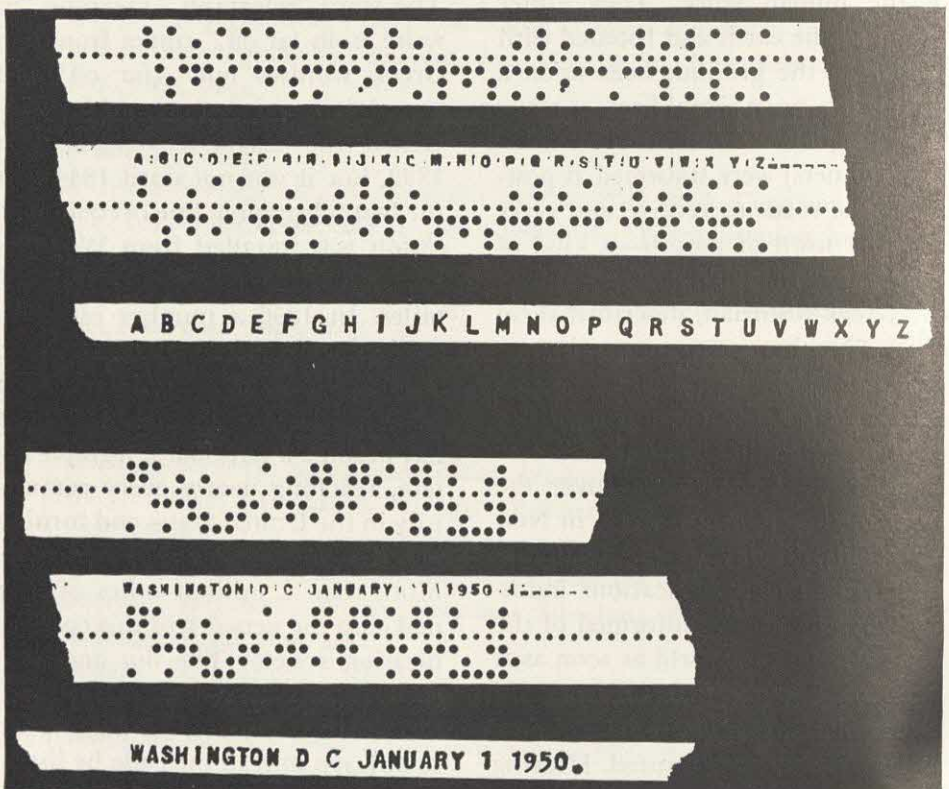


**Importance of the telegraph.** The telegraph has been a large factor in the development of all American industries, since the majority of telegrams and cablegrams contain business messages. Telegrams mean urgent business. They state their message briefly and to the point and demand an immediate answer. Busi-

ness houses use the telegraph to acknowledge orders, to make sales, to notify of price changes, for getting business, for checking on deliveries, for correcting errors, for making appointments, etc.

**Company organization.** A telegraph company maintains six divisions, or departments, each with a vice presi-

### TELEGRAPHIC-TYPEWRITER RIBBONS



COURTESY WESTERN UNION

The telegraphic-typewriter operator (1-37) receives messages on paper ribbons like the top one in the illustration. On another machine the "holes" are translated into letters (*third ribbon down*). Another invention, the "reperforator," prints letters above the holes on the ribbon (*second ribbon down*) when messages must be relayed to other centers. The bottom ribbon represents the final message that is pasted to a telegram. Operation of these machines is simple if a girl knows how to typewrite.

dent in charge—plant, traffic, commercial, engineering, public relations, and accounting. The *plant department* employs maintenance workers and repairmen to build the lines and keep them in order. The *traffic department* uses clerks and operators to record and send messages through different circuits. The *commercial department* employs workers at the counter to receive messages for sending over the wires and to deliver incoming messages, in addition to managing the office. The *engineering department* has specialists engaged in research and design of equipment. The *public relations department* is staffed with workers who deal with the public and make contracts. The *accounting department* uses professional and clerical workers for accounting and audits.

Among the workers in a telegraph company who are assigned to work in these departments are: *branch clerks* who wait on customers, *delivery clerks* to send messenger boys out with messages, *messenger boys*, *telegraphic-typewriter operators*, *telephone operators*, *automatic attendants*, *repairmen*, *linemen*, *groundmen*, etc. Three of these jobs are described below.

**Telegraph messenger (1-24).** Boys from 16 to 18 years of age who own bicycles can find employment in almost any community delivering telegrams, answering calls from customers who wish to send messages, and doing other errands. There is little future in this work, but some boys

make business contacts with influential men that result in better jobs.

**Telegraph operator (1-41).** The telegrapher, a clerical worker, operates telegraphic equipment for transmitting and receiving signals or messages over long distances. Operators work in small railroad offices, commercial offices, at the grounds of sporting events, such as football games and races, and in other places where there is a volume of news to be handled. A Morse set can be quickly installed wherever there is a telegraph or telephone wire.

**Telegraphic-typewriter operator (1-37).** The user of a machine known as a "Multiplex" is called a "mux operator." This operator, either man or woman, must be a good typist and send and receive written telegraphic messages to and from various destinations on the Multiplex, a typewriter-like machine. The machine is electrically connected with a similar machine at a receiving (or sending) point. The operator tears apart the strips of gummed paper on which the messages are printed and sticks them—line after line—on telegraph blanks ready for delivery. A new invention—the Telefax—is a machine that transmits messages by wire photograph; any message, even written in pencil, can be photographed and sent by wire.

For local service in a city, business offices use the services of two machines similar to the Multiplex—the "Teleprinter," installed by Western Union, or the "Teletype," installed



by the American Telephone and Telegraph Company. Business managers hire their own operators, and any stenographer can learn to operate one of these machines in a few hours. These machines supplement the old-time call signal which messenger boys answered.

### TELEPHONE WORK

On March 3, 1947, the world paid tribute to Alexander Graham Bell on the one-hundredth anniversary of his birth. In seeking an electrical means of making "visible speech," Bell found a way of transmitting sound over a wire, and in 1876 he spoke the first complete sentence ever carried over a wire electrically: "Mr. Watson, come here, I want you." Mr. Watson was one of Bell's shop mechanics.

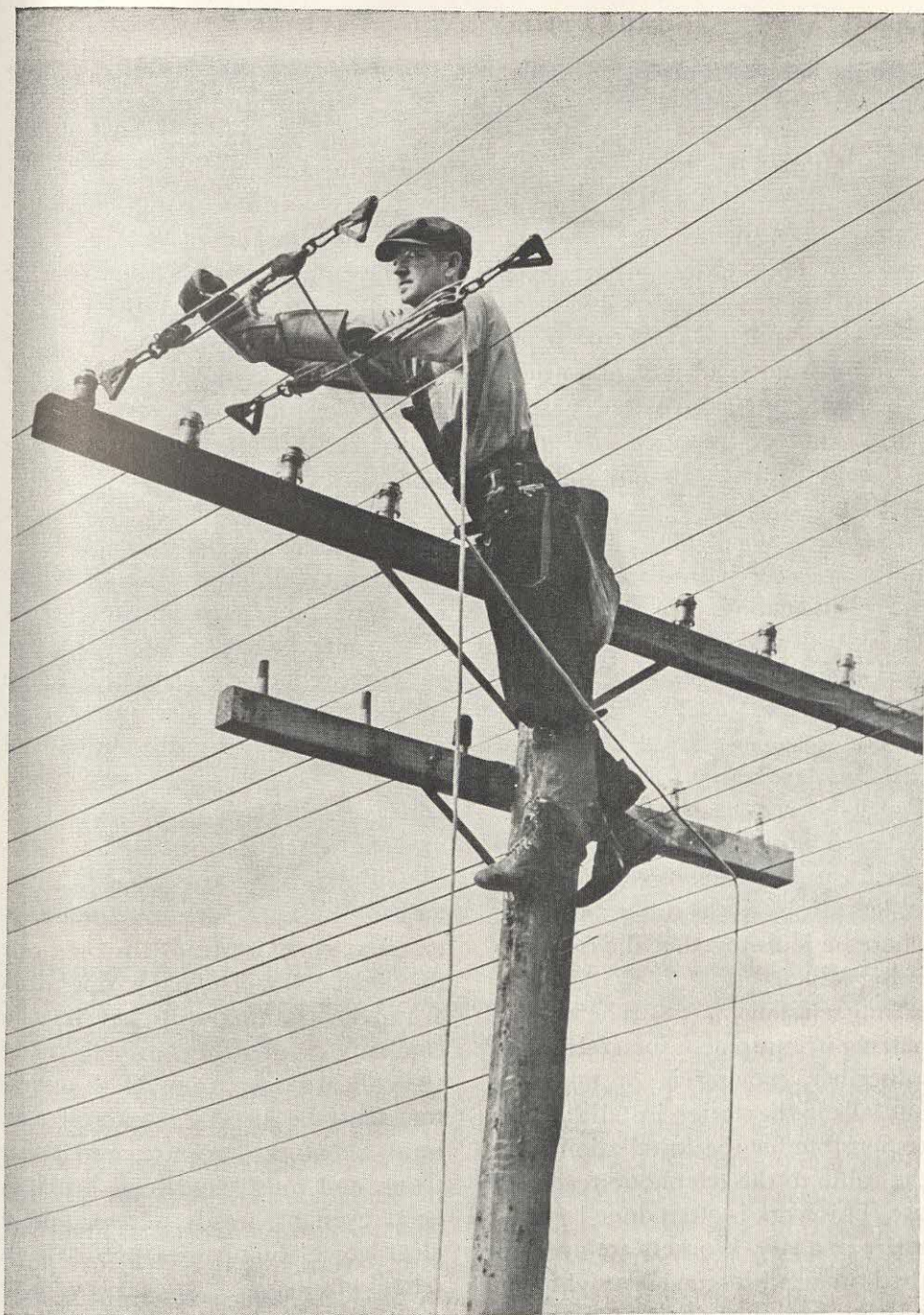
Today more than 75 million telephones serve the world, and 46 million of these serve the United States alone—one for every four persons. When the basic telephone patent expired in 1894, numerous independent companies entered the telephone business. This competition, however, resulted in bad service and led to the consolidation of the telephone systems.

The Bell System comprises a group of companies closely associated to give a single efficient service in the United States. Developed over a period of 50 years, the parent company—American Telephone and Telegraph Company—operates more

than a score of telephone-operating companies which serve parts of the United States. Several thousand independently owned companies and rural lines are connected with the Bell System. Long lines connect with telephones in other countries and even on ships at sea. One corporation looks after telephone research. Another corporation—the Western Electric Company—purchases and manufactures parts and equipment for telephones. The regional companies of the System serve their respective communities, and each exchange is a local one organized to meet the local problems of operation. Thus telephone subscribers receive efficient world-wide service through a centralized organization.

The workers in the telephone company are employed in five different departments: (1) engineering or planning, (2) plant or maintenance, (3) traffic or switchboard operation, (4) commercial or business and sales, and (5) accounting or financial planning and research. In spite of our familiarity with the telephone, we are almost unaware of the thousands of men and women engaged in this important public service. Those we do observe are the *installers*, *repairmen*, *linemen* along the road, and cable gangs in man-holes in the streets. These men work mostly at skilled occupations, installing and maintaining service lines and electrical apparatus. They are trained in the special work by the company, which prefers high school graduates.





COURTESY AMERICAN TELEPHONE AND TELEGRAPH CO.

**A telephone lineman (5-53) strings telephone wires or cables on poles, cuts in feeder lines, and attaches all line appliances for telephone communications.**



**Senior lineman (5-53).** The senior lineman hangs telephone wires on poles, cuts in feeder lines, and attaches all line appliances for telephone communication. The *city lineman* (senior) maintains telephone cables in large cities, locates open circuits, and makes repairs. Poles and wires along streetcar tracks are maintained by similar workers, known as *street railway linemen*. All of this work requires physically strong, active men to work in all kinds of weather.

**Junior lineman (7-53).** The work of junior lineman is similar to that of senior lineman, except that he is a semiskilled worker who assists in the work of maintenance.

**Cable splicer (5-53).** The largest telephone cables carry 2121 pairs of wires, yet are only  $2\frac{5}{8}$  inches thick. The wires are arranged in bundles, and each wire must be identified before it can be joined to another. The cable splicer works in a man-hole where he joins together the two ends of big cables.

**Station installer (7-53).** The work of putting in equipment for a telephone subscriber, moving it, or taking it out falls to the station installer. He is responsible for the installation from the cable to the telephone ready for use. This work is often done by territories in a city. Workers are average-sized men with good eyesight and hearing, and they must be courteous in dealing with subscribers.

**Senior station installer (5-53).** The senior station installer has charge of

two or more station installers whose work he plans and assigns—installing telephone-station equipment, coin collectors, telephone booths, inside and outside wiring, etc.

**Telephone inspector (5-76).** The telephone inspector is a skilled worker who inspects telephone equipment. The inspector determines whether poles, wires, cables, terminals, and central office apparatus have been installed and maintained in accordance with prescribed practice.

**Telephone operator (1-42).** Most women employed in the telephone industry are clerical workers, including those who operate switchboards of various kinds. Operators at company switchboards learn to make telephone connections quickly by plugging the right jacks into the right holes in the switchboards. Even with the dial-telephone system, there are many types of operators who handle information, long-distance calls, and trouble calls. The telephone operator's work is steady throughout the year. New company operators are given training with pay by the company while they are learning switchboard operation. New operators must be 18 to 25 years of age, must be quick, accurate, and courteous, and must have good hearing, good eyesight, steady nerves, and a clear voice. Companies prefer high school graduates.

Private switchboard operators, not employed by the telephone company but by business houses or hotels, are known as "PBX operators." They



COURTESY AMERICAN TELEPHONE AND TELEGRAPH CO.

**Telephone operators (1-42)** in company central offices operate switchboards equipped with cords and make connections by plugging into jacks on the switchboard. Training for these jobs is given by the company on the job.

operate cordless telephone switchboards in offices and establishments to relay incoming and interoffice calls to the different telephones in the plant or hotel and to the outside. Many such operators perform other clerical duties when not engaged in handling calls—sorting mail, typing, receiving visitors, etc.

**Operators of modern devices.** In 1927 long-distance telephone service,

through the combined use of wire telephony and radio, was opened between New York and London and in 1930 extended to South America and Australia. Every new improvement means new jobs for operators. Another device—the teletypewriter—is a machine similar to a typewriter which transmits written conversations and reports. Teletypewriters are installed by press associations to





COURTESY AMERICAN TELEPHONE AND TELEGRAPH CO.

**A teletypewriter operator (1-37),** using a Teletype machine, sends and receives written messages to and from different offices. The keyboard is electrically connected to another machine of the same type.

carry news quickly, and by governmental agencies and private corporations for many kinds of reports. Transmission of pictures by wire, first demonstrated in 1924, has now become a regular feature in newspaper work. The wirephoto machine, operated by a worker who knows photographic processes and can develop and print pictures, sends and receives pictures all over the country to present news as it happens. Similar pictures are transmitted abroad by radio.

### **RADIO, RADAR, AND TELEVISION**

Everyone is familiar with radio because there is a radio set in use in this country for every three persons. Radar, based on electronic principles, was developed during World War II. Television, a miracle of electronics, has already become a great industry. Radio, radar, and television offer great opportunities for employment for those willing to study and understand the scientific

principles of electronics. In the field of electronics, the production of radio and radar equipment makes up a large manufacturing industry.

**Radio manufacturing.** A radio transmitter can send out electromagnetic waves through the ether to receivers halfway around the world. Receivers catch the electric waves as they come from the broadcasting stations and translate them into sound waves—words, music, and signals. Manufacturers produce “AM” sets and “FM” sets. Frequency modulation, or FM, consists of the operation of radio sets at a higher frequency than the ordinary AM (amplitude modulation) sets. Listeners prefer the FM sets because they give finer, clearer, static-free reception for broadcasts, but the sets are more expensive than the AM sets.

Radio manufacturing includes probably 200 different occupations in the manufacture of radio receiving sets, loudspeakers, tubes, radar equipment, wire recorders, sound apparatus for motion pictures, and parts for radios. In related fields many persons find work as salesmen and servicemen. About 230 manufacturing plants employ 200,000 workers, three-fourths of whom are located in the big cities in New York, Illinois, Pennsylvania, Massachusetts, and New Jersey.

The future prospects of the radio industry for the next several years are probably limited. The industry expanded at a rapid rate during World War II, but since the advent

of television, fewer workers are needed for production. In 1952 only 10 million radio sets were manufactured compared to 17 million manufactured in 1947. The rapid rise of television has undoubtedly reduced the demand for radio sets still more. Manufacturers, however, constantly design new sets and experiment with new devices and plans for the whole broad field of electronics and have already entered the field of television. Inventions and improvements in radio and radar result in many changes in design of equipment. However, there is little change in the basic operations that workers perform on the job.

Much of the manufacturing work is seasonal from spring to summer to meet the fall and winter demand. Any plant, nevertheless, maintains a permanent group of skilled craftsmen—*tool designers* (0-48), *machinists* (4-75), *die makers* (4-76), and *cabinetmakers* (4-32).

Design is the first procedure in radio manufacturing. *Radio design engineers* (0-17) make model instruments to be manufactured. Workers in the sales and production departments study and criticize these models. *Electrical draftsmen* (0-48) draw up blueprints with specifications for production. *Foremen* and *personnel directors* estimate the number of workers needed to make the sets in quantity, and production begins.

In the production division many semiskilled workers perform work that is largely mechanized. Some as-





COURTESY BOSTON & MAINE R. R.

**A telephone field engineer (0-61) drives around in a specially equipped car to test radio systems being installed in such large outdoor places as freight yards.**





COURTESY NATIONAL BROADCASTING CO.

In the control room the **control-room man (0-61)** sends radio programs to various places through his switch-bank desk. The **radio announcer (0-69)** introduces different types of programs. Persons broadcasting can be seen through the window in the sound-proof studio.

sembly work can be done by workers with little previous experience if they have nimble fingers and are quick at using such small hand tools as screw drivers, wrenches, files, and pliers to assemble small parts. In light assembly operations half of the *assemblers (6-72)* are women. For example, a *speaker assembler (6-98)* fastens the cone of the loud speaker to the cone coil with cement, or glues felt around the rim of the loud speaker to prevent vibration. *Condenser winders (6-98)* operate a machine that winds paper condensers

(tin foil and insulating paper) on spools. In 2 to 6 weeks, workers can learn to operate machines in assembling, inspecting, and testing. *Electrical testers (4-98)* test circuits in radio receiving sets to determine whether a set functions according to established standards. *Testing-machine operators (6-98)* test or inspect radio coils and reject faulty ones. This is an important phase of radio manufacture because some 900 inspections are made in building an instrument. Testers or inspectors earn from \$1.30 to \$1.50 an hour.



In general, workers in production should have a reasonably good knowledge of mathematics and electricity. Preparation for jobs as tester, or inspector, is offered in a number of technical schools that maintain 12-month courses. Apprenticeship programs are established in the trades in a number of plants where it is possible to learn certain branches of production while on the job. Professional and technical workers prepare for electronics work in college. Unskilled workers usually enter the industry through the assembly division. The majority of workers in radio are under union agreements—United Electrical, Radio, and Machine Workers of America (CIO) and International Brotherhood of Electrical Workers (AFL).

The radio-broadcasting industry creates and transmits local and national radio programs from studios to homes. This work includes the preparation and direction of musical programs, plays, and skits; making of electrical recordings; operation and maintenance of equipment; sale of programs to sponsors; and the broadcasting of news and sporting events. More than 2300 radio stations employ 20,000 regular workers, not including part-time workers and the artists on the programs.

The occupation of *radio announcer* (0-69) is discussed in Chapter 12, page 195. The announcer identifies the station and gives necessary network cues to the *control-room man* (0-61) who routes radio

programs over transmission lines according to a program schedule.

**Radar.** Radar is a kind of radio detection and ranging device that uses the principles of radio to send and receive electromagnetic waves. The radar sets are so combined that when a wave is sent out and strikes an object, it rebounds into the receiver. The time taken for the wave to strike the object and rebound is measured, and from these data the distance to the object can be computed. Because this work is highly specialized, only men of good training and experience are employed. Peacetime applications of radar are found in welding control, high-frequency heating (cooking), photography, and in many other areas.

A limited number of firms that deal in radar equipment hire *radar technicians* (5-83) who also contract to service military radar. Large radar equipment is used in navigation on the oceans, the Great Lakes, and the inland waterways. *Electronic technicians* (5-83) install, service, and repair electronic equipment, especially in hotels, clubs, office buildings, and stores. Such equipment includes radios, wire recorders, and office intercommunication systems. Experience alone is not enough to prepare a technician for a job; he should have a good background knowledge of electronics and the fundamentals of electricity as offered in a good technical school or college. After such training, new employees are often trained on the job for several weeks.





WIDE WORLD

This guided missile, without pilot or crew, is poised in launching position on its mobile launcher. A radar-controlled pilotless bomber, it takes off with rocket assistance and continues to its target, powered by a turbojet engine. **Radar technicians (5-83)**, both civilian and military, are needed to work on this type of aircraft. Such technicians also work at servicing the radar equipment used in navigation at sea.



**Television.** On January 20, 1953, millions of people in 78 large cities watched the inauguration of President Eisenhower. Television history was made on June 2, 1953, when the coronation of Queen Elizabeth II was televised. This extensive telecast was the first television program to be viewed on the same day by millions in America and Europe. Films made in London of the live British telecast were flown to America and shown the same day. The apparatus used in television is not only costly and elaborate but represents one of the most technically complicated devices ever assembled. Television programs have been operated in New York by the National Broadcasting Company (NBC) since 1938. In 1951 there were 109 authorized television stations in 33 states and Washington, D. C. The importance of this growing industry is revealed in the number of television sets manufactured in recent years: 1947—210,000 sets; 1948—1,050,000 sets; 1949—2,700,000 sets; 1950—7,465,000 sets; 1952—21,000,000 sets.

In 1923, when radio broadcasting was perfected, long-distance telephone wires were available for interconnecting radio stations, and the cost of using these facilities was moderate. For television, no such wires exist. It is necessary to build special equipment either by (1) coaxial cables specially laid between cities or (2) through the use of radio relays beamed from one high tower to another, 15 to 130 miles apart. The ex-

pense of producing television programs is therefore high because the programs must be widely syndicated over large networks of stations. Several sponsors for a single program share the expense and consequently interrupt programs with considerable advertising.

Among the jobs in the television-broadcasting industry are the following types that are essential:

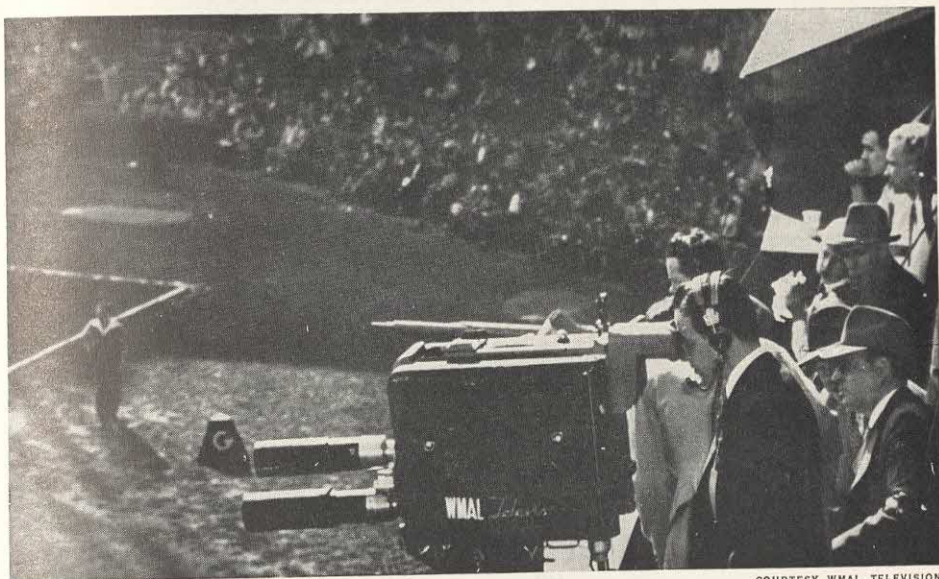
*The television engineer (0-17)* designs and supervises the construction and installation of television equipment.

*The program director (0-97)* is an executive responsible for the supervision of all program schedules. The director selects the title and time of broadcasts and determines the type and length of the programs. He needs a background of dramatic training because he tries out and engages the performers.

*The television cameraman (0-56)* directs and focuses a television camera on scenes being broadcast and watches the images to be photographed through a monitor on his camera. He aims to make artistic camera shots and cooperates with the program director.

*The control-room technician (0-61)* operates control-room equipment in a television broadcasting studio. He must use independent judgment as he observes meters and indicators and controls the technical quality of the broadcast.

*The television mechanic (5-83),* or serviceman, goes on call to service



COURTESY WMAL TELEVISION

A television crew of seventeen men is required to televise a football game. The expense of producing television programs is high because the programs must be widely syndicated over large networks of stations.

television sets in homes and public places. At present he finds ready employment at good wages, since many television sets are being sold and some installation is usually required. Installing antennas on roofs is a separate service. Stores that guarantee sets for a certain length of time employ television mechanics full time.

The present workers in television are the pioneers in a growing indus-

try. Improvements are constantly being made in television sets and in the quality of pictures received. Television programs have improved and the public is looking forward to color television in the future. Workers need a good knowledge of electronics and radio for the technical jobs, and training in this work is offered in a number of colleges, universities, and technical schools.

### For Discussion

1. How did primitive people send messages at a distance?
2. How does the multiplex system increase the capacity of the telegraph?
3. Name the six telegraph-company divisions in which employees work.



4. Is work as telegraph messenger a good opportunity for boys?
5. What is a "mux operator"?
6. How is the Bell Telephone Company organized?
7. In what five departments of the company do employees work?
8. Describe the work of (a) a senior lineman; (b) a cable splicer; (c) a station installer.
9. In radio manufacturing, what does a testing-machine operator do?
10. Tell how one can compute distance by radar.
11. Compare the number of radio and television sets manufactured in a recent year.
12. What are the duties of a program director in a television studio?

### What to Read

- Broadcasting: Radio and Television*, Henry L. Ewbank and Sherman P. Lawton. Harper & Brothers, New York, 1952. 528 p.
- Employment Outlook in Electronics Manufacturing*. Bureau of Labor Statistics Bulletin 1072. U.S. Government Printing Office, Washington 25, D.C., 1952. 30 p. (25 cents)
- Employment Outlook in Radio and Television Broadcasting Occupations*. Bureau of Labor Statistics Bulletin 958. U.S. Government Printing Office, Washington 25, D.C., 1949. 69 p. (30 cents)
- The Future of Television*, Orrin E. Dunlap, Jr. Harper & Brothers, New York, 1947. 194 p.
- Getting a Job in Television*, John Southwell. McGraw-Hill Book Company, Inc., New York, 1947. 120 p.
- Opportunities in Motion Pictures*, Pincus W. Tell. Vocational Guidance Manuals, Inc., New York, 1949. 68 p.
- Opportunities in Radio*, Jo Ranson and Richard Pack. Vocational Guidance Manuals, Inc., New York, 1946. 104 p.
- Opportunities in Television*, Jo Ranson and Richard Pack. Vocational Guidance Manuals, Inc., New York, 1950.
- Our Industrial Age*, H. M. Boodish. McGraw-Hill Book Company, Inc., New York, 1949. 390 p. (See Chapter 5, "Communication in Our Industrial Age.")
- Radar—What Radar Is and How It Works*, Orrin E. Dunlap, Jr. Harper & Brothers, New York, 1946. 208 p.

## How to Relate School Subjects to Occupations

Every school activity contributes in some way to work that you will do in the future. Ask different classroom teachers to discuss briefly occupational units that relate to their subject areas. Below is a list of suggested activities which might be carried out to show occupational relationships in various study areas that concern the communications industry.

<b>SUBJECT AREA</b>	<b>OCCUPATIONAL UNITS</b>
<b>ART:</b>	Discuss the advantages of television in a study of art.
<b>BUSINESS:</b>	Discuss the "stock ticker" for stock-market quotations.
<b>ENGLISH:</b>	Demonstrate the importance of good English and good diction in the communication industries. If possible, use a wire recorder in class.
<b>HEALTH:</b>	In what branches of the communications industries is good health, freedom from colds, and physical stamina of vital importance?
<b>HOME ECONOMICS:</b>	Discuss the use and abuse of the home telephone, radio, and television set and their effect on family relations.
<b>LANGUAGES:</b>	Demonstrate language recordings for learning a foreign language.
<b>MATHEMATICS:</b>	Discuss the measurement of "wave lengths" on radio and television.
<b>MUSIC:</b>	Discuss the musicians' union and its effect on radio music.
<b>OCCUPATIONS:</b>	Describe local jobs that are open to young people who wish to enter the communications industry.
<b>SCIENCE:</b>	Demonstrate in the laboratory how radio and television sets operate.
<b>SHOPWORK:</b>	What kind of shopwork in a vocational school is best for a boy who wishes to enter the communications industry?
<b>SOCIAL STUDIES:</b>	Trace the history of radio in America, or explain the popularity of television and discuss its worth to society. Discuss the pros and cons of televising senate hearings.



- Radio—The Fifth Estate*, Judith C. Waller. Houghton Mifflin Company, Boston, 1946. 483 p.
- Radio Repairman and Electronic Industries*. Michigan Unemployment Compensation Commission, Detroit, 1948. 19 p.
- Television*. Job Opportunities in Programming and Production, Administration, Engineering, Writing. Western Personnel Institute, Pasadena 1, Calif., 1950. 51 p.
- Television for Beginners—Theater Television*, James R. Cameron. Cameron Publishing Co., Coral Gables, Fla., 1947. 306 p.
- Television Primer of Production and Direction*, Louis A. Sposa. McGraw-Hill Book Company, Inc., New York, 1947. 237 p.
- Understanding Television*, Orrin E. Dunlap, Jr. Greenberg: Publisher, Inc., New York, 1948. 128 p.
- The Woman Telephone Worker*. Women's Bureau Bulletin 207. U.S. Government Printing Office, Washington 25, D.C., 1946. 38 p. (10 cents)
- Women in Radio*. Women's Bureau Bulletin 222. U.S. Government Printing Office, Washington 25, D.C., 1948. 30 p. (15 cents)

## APPENDICES

**Appendix A.** *Outline for a Community Survey*

**Appendix B.** *1950 Census of Population and Labor Force*

**Appendix C.** *Employed Persons by Occupation Group in 1950*

**Appendix D.** *Occupations of Employed Persons in 1950*



## **APPENDIX A.      OUTLINE FOR A**

### **COMMUNITY SURVEY**

Select items that are practical for the size of the survey and the time allowed.

#### **1. Historical sketch**

- a. Origin: circumstances of first settlement and date
- b. Trade routes: rivers, harbors, canals, railroads, airports
- c. Activities: industrial, commercial, educational—how and why they developed

#### **2. Location**

- a. Geography (The Geological Survey, Washington 25, D. C., publishes maps of communities and their surroundings which may be obtained at small cost.)
- b. Climate: temperatures, rainfall
- c. Tourist attractions: scenery, history, sports, etc.
- d. Resources available: raw materials, fuel, water

#### **3. Population**

- a. Number: persons and families
- b. Growth: steady or rapid

#### **4. Materials required by local industry**

- a. Raw materials
- b. Products of other industries

#### **5. Power**

- a. Sources: water, steam, gas, oil, electricity
- b. Cost: rates per unit of measurement

#### **6. Industrial development**

- a. Plants and wage earners: number
- b. Value of products: local industry
- c. Waste products: how used
- d. Individual industries (important ones): new industries located in the area within the past 10 years; number and kinds closed down or leaving the area

#### **7. Labor situation**

- a. Labor supply: adequate or not
- b. Labor laws: special laws and local regulations
- c. Labor unions: organizations and membership

**8. Employment**

- a. Gainfully employed: number (Compare with other areas. Use current Census data for state or region.)
- b. Unemployed: number

**9. Consumer purchasing power**

- a. Wage and salary data if available
- b. Interest on banking accounts (Use local newspaper for banks' financial statements.)
- c. Income: trends in recent years

**10. Living costs, standards, and conditions**

- a. Living costs: increase or decrease in prices over last year
- b. Family expenditures: kinds of goods and services used
- c. Housing: average rent; rates for light, heat, water, telephone
- d. Living standards: number of telephones, registered automobiles, electric meters, radio and television sets in use; circulation of newspapers and magazines

**11. Construction and real estate**

- a. Building permits: number and value for year
- b. Trends in local construction

**12. Wholesale trade**

- a. Number of wholesale stores
- b. Kinds of business: grocery, drug, etc.

**13. Retail trade and shopping area**

- a. Retail stores: number
- b. Store policies: kinds of credit; returned goods; advertising; deliveries; etc.
- c. Store locations: downtown, uptown, suburban
- d. Consumer buying radius: extent of local newspaper distribution, retail store deliveries, bus lines; area in square miles

**14. Buying habits of local customers**

- a. Shopping hours: general preference as to time of day, days of the week, time of the month
- b. Out-of-town buying habits: extent, types of goods bought

**15. Service establishments**

- a. Hotels: number, description
- b. Places of amusement: number, kinds

**16. Transportation facilities**

- a. Passenger service: rail, water, air, highway, bus, streetcar
- b. Freight service: railroad, truck, ship
- c. Pipeline: transporting oil or gas to or from the area

**17. Public warehousing**

- a. Storage houses: household goods, general merchandise

*(continued on next page)*



- b. Grain elevators
- c. Cold storage plants

**18. Banking and insurance**

- a. Principal banks: when established, types—national, state, etc.
- b. Interest rates
- c. Finance companies: installment, building-and-loan associations, etc.
- d. Insurance and brokerage offices

**19. Professional service (Check in the classified index of the telephone directory.)**

- a. Physicians: number, kind, sex
- b. Dentists: number, sex
- c. Lawyers: number, sex
- d. Others

**20. Newspapers, radio, and television stations (Interview local managers.)**

- a. Newspapers: names and circulation (Obtain their advertising rate cards.)
- b. Radio stations: names, ownership, wattage, importance in advertising
- c. Television stations: name, management

**21. Conventions, fairs, expositions**

- a. Local facilities for large or small groups
- b. Nature of gatherings: annual or occasional fairs, trade shows, etc.
- c. Importance to community: income, employment

**22. Industrial and commercial associations**

- a. Names of associations: chambers of commerce, grain exchanges, etc.
- b. Value to local businessmen

**23. Educational and other institutions drawing nonresidents**

- a. Colleges and universities: names, enrollments, tuition fees
- b. Hospitals: number, types

**24. Government establishments (federal, state, or county)**

- a. Government agencies: describe each
- b. Value to community: employment, purchasing power

**25. State and local laws affecting industry, commerce, and consumer**

- a. State: taxation, incorporation, labor, insurance, zoning
- b. Local: zoning, traffic, licensing, etc.

**26. Municipal administration**

- a. Form of city government; mayor-council, commission, council-manager, town meeting
- b. Organization: chart of departments, number of employees
- c. Revenue: property taxes, poll taxes, license taxes, fines, etc.
- d. Expenditures: government, protection, health, highways, education, etc.

**27. Civic, social, and related activities**

- a. Public facilities: schools, libraries, theaters, parks, playgrounds
- b. Private facilities: schools, churches, clubs, lodges, etc.

## APPENDIX B. 1950 CENSUS OF POPULATION

### AND LABOR FORCE <sup>1</sup>

#### CENSUS OF POPULATION

	Men	Women	Total
<b>Persons 14 years old and over:</b>	<b>55,311,617</b>	<b>57,042,407</b>	<b>112,354,024</b>
In labor force (See table below)	43,553,386	16,500,582	60,053,968
Not in labor force	11,758,231	40,541,825	52,300,056
<b>Under 14 years of age</b>	<b>19,521,622</b>	<b>18,821,715</b>	<b>38,343,337</b>
<b>Total population in the United States</b>	<b>74,833,239</b>	<b>75,864,122</b>	<b>150,697,361</b>

#### CENSUS OF LABOR FORCE

<b>Civilian labor force:</b>	<b>42,598,767</b>	<b>16,472,888</b>	<b>59,071,655</b>
Employed (See Appendixes C and D)	40,510,176	15,715,164	56,225,340
Unemployed:	2,088,591	757,724	2,846,315
Experienced workers	2,043,662	729,941	2,773,603
New workers	44,929	27,783	72,712
<b>Armed Forces in United States</b>	<b>954,619</b>	<b>27,694</b>	<b>982,313</b>
<b>Total numbers in labor force</b>	<b>43,553,386</b>	<b>16,500,582</b>	<b>60,053,968,</b>

These tables should be read as follows: As of April 1, 1950, according to the Bureau of the Census the total population of the United States numbered 150,697,361. Of these, 112 million were 14 years of age and over, but 52 million of them were not in the labor force because they were housewives, persons physically unable to work, inmates of various institutions, students in schools and colleges, and other dependents. In addition nearly 1 million were in the Armed Forces in the United States. The remainder (60,053,968) comprised the civilian labor force, but of these 2,773,603 were experienced workers not employed, and 72,712 were new workers, prepared to work, often just out of school and without experience, and without jobs. The remainder (56,225,340) represented the employed persons in the civilian labor force, and the occupations of these workers are shown for men and for women in the tables in Appendixes C and D.

<sup>1</sup> These data were first released in 1953 from the 1950 Census of Population, Bureau of the Census.



## APPENDIX C. EMPLOYED PERSONS BY

Code (First Digit)	Occupation Group	Men		Women		Total	
		Number (Thou- sands*)	Per- cent	Number (Thou- sands*)	Per- cent	Number (Thou- sands*)	Per- cent
<b>0</b>	<b>Professional and manage- rial occupations:</b>						
	Professional workers	2,495	6	1,784	11	4,279	7
	Semiprofessional workers	475	1	155	1	630	1
	Managers, officials, and proprietors	4,341	11	677	4	5,018	9
<b>1</b>	<b>Clerical and sales occupa- tions:</b>						
	Clerical and kindred workers	2,603	7	4,292	27	6,894	12
	Salesmen and saleswomen	2,597	6	1,330	8	3,927	7
<b>2</b>	<b>Service occupations:</b>						
	Domestic service workers	73	—	1,334	9	1,407	3
	Personal service workers	1,139	3	1,748	11	2,887	5
	Protective service workers	565	1	11	—	576	1
	Building service workers and porters	669	2	156	1	825	2
<b>3</b>	<b>Agricultural, fishery, for- estry, and kindred occupa- tions:</b>						
	Agricultural, horticultural, and kindred workers	6,140	15	566	4	6,706	12
	Fishery workers	**		**			
	Forestry and hunting and trapping workers	**		**			
<b>4-5</b>	<b>Skilled occupations:</b>						
	Craftsmen, foremen, and kindred workers	7,537	19	236	2	7,773	14

(See footnotes on opposite page.)

# OCCUPATION GROUP IN 1950

Code (First Digit)	Occupation Group	Men		Women		Total	
		Number (Thou- sands*)	Per- cent	Number (Thou- sands*)	Per- cent	Number (Thou- sands*)	Per- cent
<b>6-7</b>	<b>Semiskilled occupations:</b>						
	Operatives and kindred workers	8,127	20	3,019	19	11,146	20
<b>8-9</b>	<b>Unskilled occupations:</b>						
	Laborers, except farm and mine	3,290	8	127	1	3,417	6
	<b>Occupation not reported</b>	458	1	282	2	741	1
	<b>Total employed persons in all occupations</b>	40,510	100	15,715	100	56,225	100

\* Numbers are rounded to nearest thousand.

\*\* The Bureau of the Census includes these workers under "Laborers." See "Fishermen and oystermen" under "Laborers" in "Group VII: unskilled occupations," page 578. Forestry workers (unskilled) and hunters and trappers are not detailed. Further detail of numbers in the table are shown in Appendix D, "Summary," page 579.



## APPENDIX D. OCCUPATIONS OF

Occupation	Employed Persons	
	Men	Women
<b>Group I: Professional, semiprofessional, and managerial occupations</b>		
Professional		
Accountants and auditors	320,767	55,518
Actors and actresses	9,809	5,077
Architects	23,823	933
Artists and art teachers	47,907	29,566
Authors	9,592	6,059
Chemists	66,982	7,451
Chiropractors	11,061	1,842
Clergymen	160,694	6,777
College presidents, professors, and instructors, n.e.c.*	95,811	28,932
Dentists	73,024	2,045
Dietitians and nutritionists	1,341	21,059
Editors and reporters	60,730	28,595
Engineers, technical (total)	(518,781)	(6,475)
Aeronautical	17,304	331
Chemical	31,893	629
Civil	121,386	1,932
Electrical	105,278	1,237
Industrial	40,068	450
Mechanical	109,270	576
Metallurgical and metallurgists	11,099	241
Mining	10,656	109
Not elsewhere classified	71,827	970
Farm and home-management advisers	6,210	6,032
Foresters and conservationists	25,297	830
Lawyers and judges	174,205	6,256

\* The abbreviation "n.e.c." stands for "not elsewhere classified."

# EMPLOYED PERSONS IN 1950<sup>1</sup>

Occupation	Employed Persons	
	Men	Women
Librarians	6,303	49,026
Musicians and music teachers	75,612	77,803
Natural scientists	34,226	5,839
Nurses, professional	9,683	388,511
Nurses, student professional	1,646	74,574
Osteopaths	4,366	783
Personnel and labor-relations workers	37,070	15,016
Pharmacists	80,854	7,261
Physicians and surgeons	180,233	11,714
Recreation and group workers	9,353	6,693
Social and welfare workers, except group	23,193	52,221
Social scientists	23,827	11,376
Teachers, n.e.c.	285,612	834,526
Therapists and healers	12,347	12,118
Veterinarians	12,547	832
Professional, technical, and kindred workers, n.e.c.	92,549	21,885
Total professional and kindred workers	2,495,455	1,783,625
Semiprofessional workers	13,535	185
Airplane pilots and navigators	10,867	705
Athletes	4,659	11,438
Dancers and dancing teachers	28,303	10,203
Designers	113,298	8,370
Draftsmen	10,643	4,293
Entertainers, n.e.c.	36,757	2,643
Funeral directors and embalmers	13,758	1,718
Optometrists	43,401	9,088
Photographers	14,359	1,482
Radio operators	12,593	28,838
Religious workers	33,854	11,133
Sports instructors and officials		

<sup>1</sup>Source: 1950 Census reports.

(continued on next page)



# Occupations of Employed

Occupation	Employed Persons	
	Men	Women
Surveyors	24,375	946
Technicians, medical and dental	33,053	43,275
Technicians, testing	58,707	16,800
Technicians, n.e.c.	22,639	4,243
Total semiprofessional workers	474,801	155,360
Managers, officials, and proprietors (except farm)		
Buyers and department heads, store	106,120	36,127
Buyers and shippers, farm products	27,576	590
Conductors, railroad	55,359	352
Credit men	25,748	7,151
Floormen and floor managers, store	5,815	4,995
Inspectors, public administration	53,639	2,266
Managers and superintendents, building	43,331	22,385
Officers, pilots, pursers, and engineers, ship	36,975	1,129
Officers and administrators, public administration	127,470	26,322
Officials, lodge, society, union, etc.	23,760	2,885
Postmasters	22,032	16,668
Purchasing agents and buyers, n.e.c.	57,316	5,718
Managers, officials, and proprietors		
Construction	280,440	4,625
Manufacturing	609,113	40,806
Transportation	141,296	5,828
Telecommunications, utilities, sanitary services	60,857	6,234
Wholesale trade	318,637	16,354
Retail trade	1,608,254	320,139
Banking and other finance	127,237	13,390
Insurance and real estate	97,530	17,513
Business services	51,663	9,834
Automobile repair services and garages	82,359	1,469
Miscellaneous repair services	32,379	1,537
Personal services	148,250	61,030
All other industries (including not reported)	197,531	51,431
Total managers, officials, and proprietors	4,340,687	676,778
Total professional, semiprofessional, and managerial occupations (Group I)	7,310,943	2,615,763

**Persons in 1950 (Continued)**

Occupation	Employed Persons	
	Men	Women
<b>Group II: Clerical and sales occupations</b>		
Clerical and kindred workers		
Agents, n.e.c.	104,961	19,296
Attendants and assistants, library	3,160	9,169
Attendants, physician's and dentist's office	2,028	38,861
Baggagemen transportation	7,762	153
Bank tellers	35,332	28,486
Bookkeepers	164,743	556,229
Cashiers	42,842	183,586
Collectors, bill and account	19,918	3,450
Dispatchers and starters, vehicle	27,217	3,544
Express messengers and railway mail clerks	18,409	279
Mail carriers	161,702	3,460
Messengers and office boys	45,289	10,098
Office-machine operators	25,149	116,917
Shipping and receiving clerks	264,608	19,883
Stenographers, typists, and secretaries	88,390	1,501,089
Telegraph messengers	6,427	751
Telegraph operators	26,891	7,440
Telephone operators	16,155	341,707
Ticket, station, and express agents	51,634	7,656
Clerical and kindred workers, n.e.c.	1,489,993	1,439,710
Total clerical and kindred workers	2,602,610	4,291,764
Sales workers		
Advertising agents and salesmen	27,809	4,572
Auctioneers	4,826	454
Demonstrators	2,415	10,893
Hucksters and peddlers	18,871	3,079
Insurance agents and brokers	278,120	25,968
Newsboys	92,301	3,867
Real-estate agents and brokers	120,325	20,277
Stock and bond salesmen	9,886	1,086
Salesmen and sales clerks n.e.c.		
Manufacturing	298,271	22,452
Wholesale trade	391,757	15,062
Retail trade	1,253,113	1,192,323
Other industries (including not reported)	99,092	29,691
Total sales workers	2,596,786	1,329,724
Total clerical and sales occupations (Group II)	5,199,396	5,621,488

(continued on next page)



## Occupations of Employed

Occupation	Employed Persons	
	Men	Women
<b>Group III: Service occupations</b>		
Domestic service workers (private household workers):		
Housekeepers	5,258	134,453
Laundresses	2,203	68,978
Private household workers, n.e.c.		
Living in	11,952	150,189
Living out	53,743	980,690
Total domestic service workers	73,156	1,334,310
Personal service workers		
Attendants		
Hospital and other institution	83,117	119,051
Professional and personal service, n.e.c.	15,927	33,644
Recreation and amusement	54,070	4,756
Barbers, beauticians, and manicurists	192,594	189,870
Bartenders	180,036	13,431
Boarding-house and lodging-house keepers	7,793	21,052
Bootblacks	13,376	465
Cooks, except private household	192,341	242,398
Counter and fountain workers	42,120	44,423
Housekeepers and stewards (except private household)	22,924	82,904
Midwives	307	1,391
Practical nurses	5,598	130,304
Ushers, recreation and amusement	15,430	7,836
Waiters and waitresses	119,263	545,565
Service workers, except private household, n.e.c.	194,351	310,666
Total personal service workers	1,139,247	1,747,756
Protective service workers		
Firemen, fire protection	109,503	556
Guards, watchmen, and doorkeepers	231,987	5,216
Marshals and constables	6,312	182
Policemen and detectives	188,663	3,501
Sheriffs and bailiffs	17,710	755
Watchmen (crossing) and bridge tenders	11,044	457
Total protective service workers	565,219	10,667

## Persons in 1950 (Continued)

Occupation	Employed Persons	
	Men	Women
Building service workers and porters		
Charwomen and cleaners	47,196	72,116
Elevator operators	62,160	26,929
Janitors and sextons	401,327	53,195
Porters	158,261	3,630
Total building service workers and porters	668,944	155,870
Total service occupations (Group III)	2,446,566	3,248,603

### Group IV: Agricultural, fishery, forestry, and kindred occupations

Agricultural, horticultural, and kindred workers		
Farmers (owners and tenants)	4,157,234	114,179
Farm managers	32,648	2,192
Farm foremen	16,295	446
Farm laborers, wage workers	1,333,274	130,327
Farm laborers, unpaid family workers	592,774	317,578
Farm-service laborers, self-employed	8,115	985
Total agricultural, horticultural, and kindred workers (Group IV)	6,140,340	565,707

#### Fishery workers

Fishermen and oystermen (See detail under "Laborers" in "Group VII: Unskilled occupations.")

### Group V: Skilled occupations

Craftsmen, foremen, and kindred workers		
Bakers	105,195	14,007
Blacksmiths	42,497	200
Boilermakers	35,211	318
Bookbinders	13,684	17,516
Brickmasons, stonemasons, and tile setters	164,399	924
Cabinetmakers	72,224	1,064
Carpenters	907,728	4,809
Cement and concrete finishers	29,293	185
Compositors and typesetters	164,366	11,077
Cranemen, derrickmen, and hoistmen	102,188	777
Decorators and window dressers	30,339	13,003
Electricians	307,013	2,217

(continued on next page)



# Occupations of Employed

Occupation	Employed Persons	
	Men	Women
Electrotypers and stereotypers	11,317	435
Engravers, except photoengravers	8,499	1,233
Excavating, grading, and road-machinery operators	104,855	496
Foremen	775,224	67,926
Forgemen and hammermen	12,864	260
Furriers	9,429	1,585
Glaziers	9,959	324
Heat treaters, annealers, and temperers	17,495	255
Inspectors, scalers, and graders, log and lumber	16,461	738
Inspectors	89,062	6,728
Jewelers, watchmakers, goldsmiths, and silversmiths	43,226	2,461
Job setters, metal	24,147	300
Linemen and servicemen, telegraph, telephone, and power	207,962	4,935
Locomotive engineers	72,412	430
Locomotive firemen	53,944	196
Loom fixers	29,953	340
Machinists	505,095	8,130
Mechanics and repairmen		
Airplane	69,567	1,147
Automobile	646,549	4,082
Office machine	15,657	238
Radio and television	72,794	2,027
Railroad and car shop	47,252	221
Not elsewhere classified	833,719	13,246
Millers, grain, flour, feed, etc.	9,534	67
Millwrights	57,706	241
Molders, metal	59,879	667
Motion-picture projectionists	25,625	482
Opticians and lens grinders and polishers	16,643	2,518
Painters, construction and maintenance	381,994	8,091
Paperhangers	17,994	2,941
Pattern and model makers, except paper	34,663	1,204
Photoengravers and lithographers	27,449	1,062
Piano and organ tuners and repairmen	7,478	266
Plasterers	59,820	492
Plumbers and pipe fitters	275,892	1,972
Pressmen and plate printers, printing	46,998	2,126
Rollers and roll hands, metal	29,700	659
Roofers and slaters	44,126	237
Shoemakers and repairmen, except factory	54,969	2,249

# Persons in 1950 (Continued)

Occupation	Employed Persons	
	Men	Women
Stationary engineers	212,504	1,434
Stonecutters and stone carvers	8,477	226
Structural-metal workers	48,963	267
Tailors and tailoresses	66,435	16,048
Tinsmiths, coppersmiths, and sheet-metal workers	122,047	1,163
Tool-makers and die makers and setters	151,201	1,059
Upholsterers	55,942	5,219
Craftsmen and kindred workers, n.e.c.	69,398	1,124
Members of the Armed Forces (figures not available)	—	—
Total craftsmen, foremen, and kindred workers (Group V)	7,537,016	235,644

## Group VI: Semiskilled occupations

### Semiskilled workers (operatives and kindred workers)

Apprentices	3,546	147
Auto mechanics	6,122	22
Bricklayers and masons	9,890	82
Carpenters	8,776	78
Electricians	15,126	159
Machinists and tool-makers	5,822	460
Mechanics, except auto	11,387	533
Plumbers and pipe fitters	3,967	30
Building trades, n.e.c.	6,551	71
Metalworking trades, n.e.c.	14,817	393
Printing trades	12,130	472
Other specified trades	13,874	721
Trade not specified	14,791	405
Asbestos and insulation workers	229,382	6,633
Attendants, auto service and parking	10,818	91
Blasters and powdermen	7,901	203
Boatmen, canalmen, and lock keepers	78,131	304
Brakemen, railroad	149,984	4,951
Bus drivers	6,789	163
Chainmen, rodmen, and axmen, surveying	11,073	208
Conductors, bus and street railway	234,281	4,270
Deliverymen and routemen	3,809	134,318
Dressmakers and seamstresses, except factory	23,167	1,043
Dyers	141,021	6,703
Filers, grinders, and polishers, metal		

(continued on next page)



## Occupations of Employed

Occupation	Employed Persons	
	Men	Women
Fruit, nut, and vegetable graders and packers, except factory	11,451	17,294
Furnacemen, smeltermen, and pourers	54,153	1,239
Heaters, metal	8,854	416
Laundry and dry cleaning operatives	140,802	287,534
Meat cutters, except slaughter and packing house	167,153	3,471
Milliners	1,305	11,022
Mine operatives and laborers	568,724	4,713
Motormen, mine, factory, logging camp, etc.	23,637	214
Motormen, street railway and elevated railway	26,190	350
Oilers and greasers, except auto	57,936	934
Painters, except construction and maintenance	103,241	13,354
Photographic process workers	15,556	12,463
Power-station operators	20,642	829
Sailors and deck hands	39,533	754
Sawyers	91,835	1,887
Spinners, textile	20,239	60,589
Stationary firemen	120,742	1,105
Switchmen, railroad	60,837	476
Taxicab drivers and chauffeurs	198,681	3,409
Truck and tractor drivers	1,316,877	8,051
Weavers, textile	63,585	38,596
Welders and flame cutters	250,890	9,415
Operatives and kindred workers, n.e.c., manufacturing	3,190,562	2,214,889
Operatives and kindred workers, n.e.c., nonmanufacturing	550,853	163,223
Total semiskilled workers (operatives) (Group VI)	8,127,433	3,018,687
<b>Group VII: Unskilled occupations</b>		
<b>Laborers</b>		
Fishermen and oystermen	66,340	969
Garage laborers and car washers and greasers	62,859	2,223
Gardeners, except farm, and grounds keepers	142,226	3,292
Longshoremen and stevedores	62,003	666
Lumbermen, raftsmen, and woodchoppers	170,495	1,580
Teamsters	20,851	314
Laborers, n.e.c., manufacturing	1,024,219	67,454
Laborers, n.e.c., nonmanufacturing industries (including not reported)	1,741,260	50,481
Total unskilled workers (laborers) (Group VII)	3,290,253	126,979
Occupation not reported	458,229	282,293

## Persons in 1950 (Continued)

## SUMMARY OF GROUPS I-VII

	Men	Women
<b>Group I: Professional, semiprofessional, and managerial occupations</b>		
Professional workers	2,495,455	1,783,625
Semiprofessional workers	474,801	155,360
Managers, officials, and proprietors	4,340,687	676,778
<b>Total Group I</b>	<b>7,310,943</b>	<b>2,615,763</b>
<b>Group II: Clerical and sales occupations</b>		
Clerical and kindred workers	2,602,610	4,291,764
Salesmen and saleswomen	2,596,786	1,329,724
<b>Total Group II</b>	<b>5,199,396</b>	<b>5,621,488</b>
<b>Group III: Service occupations</b>		
Domestic service workers (private household workers)	73,156	1,334,310
Personal service workers	1,139,247	1,747,756
Protective service workers	565,219	10,667
Building service workers and porters	668,944	155,870
<b>Total Group III</b>	<b>2,446,566</b>	<b>3,248,603</b>
<b>Group IV: Agricultural, fishery, forestry, and kindred occupations</b>		
Agricultural, horticultural, and kindred workers	6,140,340	565,707
Fishery workers (See laborers)	—	—
<b>Total Group IV</b>	<b>6,140,340</b>	<b>565,707</b>
<b>Group V: Skilled occupations</b>		
Craftsmen, foremen, and kindred workers	7,537,016	235,644
<b>Group VI: Semiskilled occupations</b>		
Operatives and kindred workers	8,127,433	3,018,687
<b>Group VII: Unskilled occupations</b>		
Laborers	3,290,253	126,979
<b>Occupation not reported</b>	<b>458,229</b>	<b>282,293</b>
<b>Total employed persons in all occupations</b>	<b>40,510,176</b>	<b>15,715,164</b>



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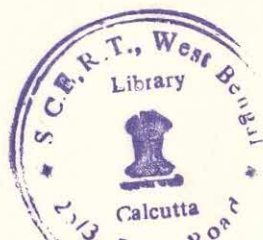


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